Published 1916 as
OIL WEEKLY

WORLD OIL

International Operations Issue

SPECIALIZED FOR EXPLORATION, DRILLING, PRODUCING,
PIPE LINE OPERATIONS AND MANAGEMENT

AUGUST 15, 1953

Subscription Price $2 Per Year
This Copy $1

UNIV. OF MICHIGAN
AUG 21 1953
EAST ENGINEERING

YOUR
GUARANTEE
OF
PERFORMANCE

HUGHES *"OW" SERIES* ROCK BITS have long been a favorite for hard to medium hard formation drilling.

Because of unique design characteristics these bits combine chipping and crushing action with moderate twisting, tearing action. The result is: the OW Series provides the most efficient bits for such formations as hard, tough dolomite, lime, shale, slate, and softer ranges of these formations.

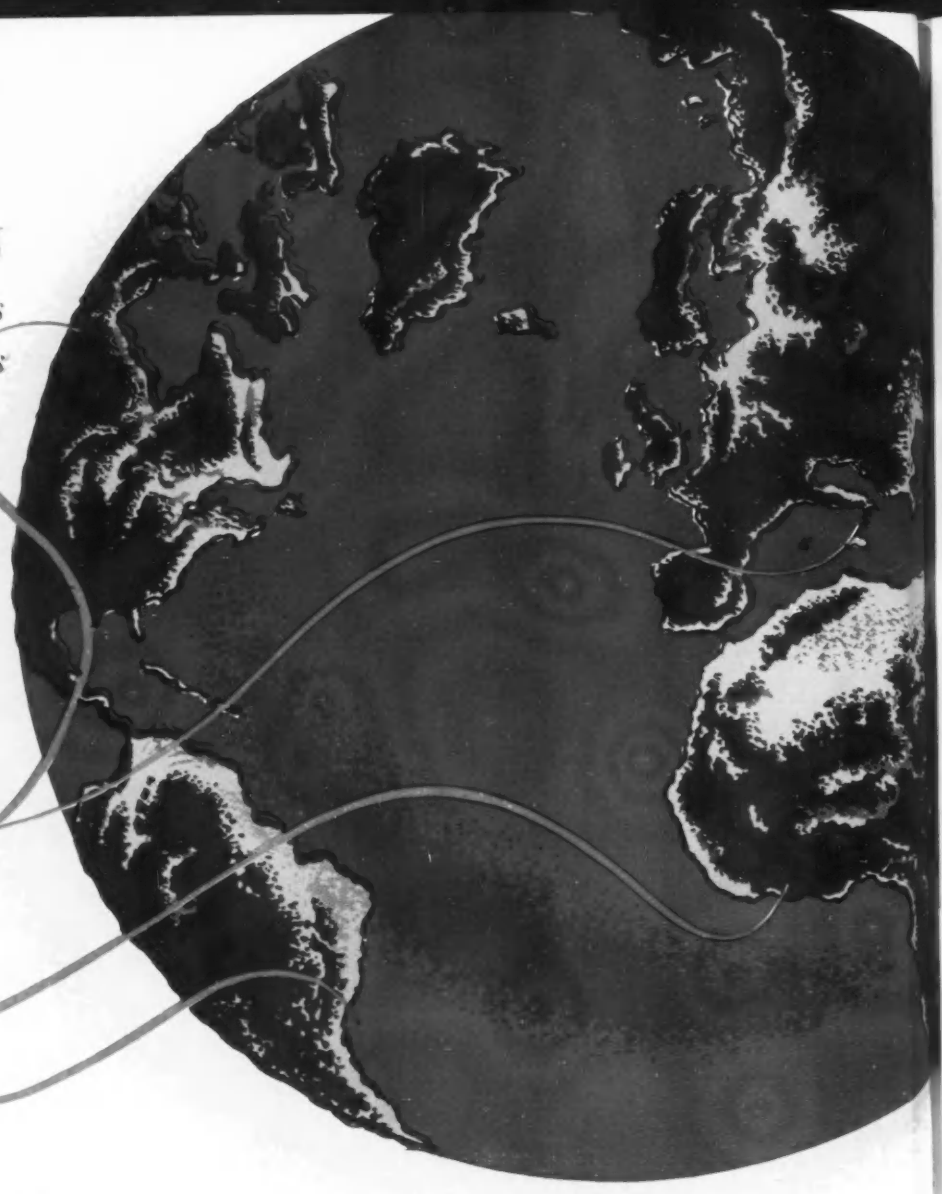
The constant improvement being made in Hughes rock bits is a never-ending process. It is your guarantee of consistent, outstanding performance.

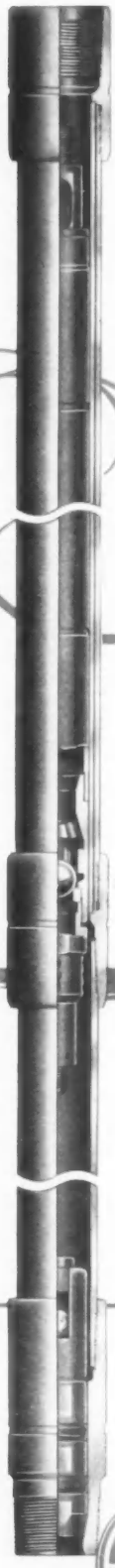
World Wide

DOWN WELL PUMP

DISTRIBUTION

Providing the Industry's Most Widespread Facilities





"Foremost in the Industry"

PRODUCT — SERVICE — DISTRIBUTION

Foremost in the Industry — A position which has been attained by the Fluid Packed Pump Company by devoting its entire efforts to the development of one product — "Oilmaster Down Well Pumps."

Wherever in the world there are pumping wells, there are pumping problems. And wherever you are located there is a National Supply store or agency ready to help you.

FLUID PACKED PUMP COMPANY

MAIN OFFICE AND PLANT: LOS NIETOS, CALIF.

Domestic distributors: The National Supply Co., Pittsburgh, Pa.

Co-distributors: Berry Supply Store, Beacon Supply Co., Industrial Supply Co.

OILMASTER PRODUCTS

EXPORT DISTRIBUTORS

THE NATIONAL SUPPLY COMPANY, INC., EXPORT DIVISION

600 Fifth Ave., New York 20, New York

WORLD OIL
Established 1916 as THE OIL WEEKLY

Index to Operating Data

Page

Alaska 132

Albania 176

Algeria 218
Map 218

Argentina 142
Oil Production 142

Australia 216

Austria 172
Oil Production by Years 172

Bahrain Island 192
Map 193

Bolivia 144

Borneo—See Indonesia and British Borneo

Brazil 150

Brunei—See Indonesia and British Borneo

Burma 200

Canada 108
Drilling 119
Oil Production 119
Maps 112-114

Central America 132

Ceram—See Indonesia and British Borneo

Chile 144
Map 144

Colombia 148
Drilling 148
Oil Production 148
Map ..... See inset

Costa Rica—See Central America

Cuba 136

Czechoslovakia 176

Denmark 176

Eastern Germany 178

Ecuador 150
Drilling 153
Oil Production 153
Map 150

Egypt 227

France 166
Map 167

Germany 160
Drilling 162
Oil Production 162
Map 161

Great Britain 172

Guatemala—See Central America

Hungary 178

India 200

Page

Indonesia and British Borneo 203
Oil Production 212
Producing Wells and Drilling 214
Maps 204, 205, 206, 212

Iran 198

Iraq 182
Map 182

Israel 228

Italy 174

Japan 214

Java—See Indonesia and British Borneo

Kuwait 187
Map 189

Mexico 126
Drilling 128
Oil Production 128
Maps 130

Morocco 222
Map 222

Netherlands 170
Map 161

Netherlands New Guinea—See Indonesia and British Borneo

Neutral Zone (Kuwait) 189
Map 189

New Zealand 216

Other Africa 227

Pakistan 200

Panama—See Central America

Peru 153
Drilling 154
Oil Production 154
Map 154

Philippines 216

Poland 178

Qatar 198

Roumania 178

Sarawak—See Indonesia and British Borneo

Saudi Arabia 192
Map 193

Sicily 228

Sumatra—See Indonesia and British Borneo

Trinidad 136
Drilling 136
Oil Production 136
Map 138

Tunisia 218

Turkey 198

Page

Union of Soviet Socialist Republics ... 176

United States:
Oil Use in U. S. Continues to Climb. 96
U. S. Crude Production at New High 106
U. S. Drilling Record Forecast in 1953 102

Data:
Crude Production by States and Districts 106
Demand and Supply of All Oils 97
Footage and Average Depths Drilled in All Wells in U. S. First Half 1953 103
Indicated Number of Wells and Footage To Be Drilled in 1953 ... 104
Stocks of Crude Petroleum in U. S. by Grades, Mid-Year, 1952-53 ... 100
U. S. Crude Runs to Stills, Refining Capacity and Stocks of Major Products by Districts 100

Charts:
All Oils Total Demand by Months .. 96
Distillate Fuel Oil Total Demand by Months 96
Motor Fuel Total Demand by Months 96
Residual Fuel Oil Total Demand by Months 96
Wells Completed, Footage Drilled in U. S. 102

Venezuela 156
Oil Production and Drilling 158
Map ..... See Insert

World
Private Capital on Road to Getting Fair "Shake" Abroad 85
Who Produces World's Oil 92

Data:
Completions and Footage Drilled .. 62
Conversion Factors 82
Crude Oil Production, by Countries, by Years 68, 72, 74
Crude Oil Production, Daily and Annual Rates 66
Crude Production by Seven Major Companies 92
Crude Reserves 77
Producing Oil Wells 79
Supply and Demand 60
World Refining Capacity and Operations 80

Charts:
Average Yield Per Well, by Major Areas 78
Completions, 1951-1952, by Areas .. 61
Crude Oil Production 63
Crude Reserves 76
Principal Producing Areas Outside U. S. 64
Producing Oil Wells, by Major Areas 78
Supply and Demand 59

Yugoslavia 174

A Quick Look at This Issue

BUSY OIL MEN: To help you put first things first, scan these time-saving digests on this and the following pages, checking ☐ those you want to read first.

☐ **Petroleum supply continues** to grow faster than demand. The Western Hemisphere consumed more than two-thirds of the world's petroleum in 1952. The Caribbean and the Middle East are the only areas which reported excess supply over demand at year's end. Charts will enable you to compare the petroleum demand and supply by areas, for 1949 through 1952. **Page 59.**

☐ **More wells were completed** and more footage drilled during 1952 than in the previous year, however 13.5 percent less wells were drilling at year's end than at the close of 1951. Canada and Venezuela played leading roles in the world's drilling activity. For a discussion of world completions and footage with charts, see **Page 61.**

☐ **World crude production jumped** 238 million barrels to a new high in 1952. North America easily led world production with more than 2 billion barrels. U. S. output for the year was 50.76 percent of the world total. For the complete story on oil production, see **Page 63.**

☐ **Estimated reserves continue to rise.** U. S. reverses previous year's diminishing reserve trend. Russia accounts for the major share of European reserves. For details on crude reserves of every oil-producing country at the close of 1952, with charts, see **Page 76.**

☐ **World producing wells increase** to boost daily average yield to 12,337,812 barrels. In cases where political factors precluded any exact figures on producing wells, WORLD OIL has used information from its private sources within those areas to arrive at carefully gauged estimates. See this report, with charts, on **Page 78.**

☐ **U. S. remains largest** petroleum refining nation in the world. Every region except the Middle East rolled up increases in refining in 1952. Western Europe continued emphasis on "home" refining with 13 new refineries. You will find a complete discussion of world refining plus table on **Page 81.**

☐ **How does foreign legislation differ** from the U. S. petroleum law? For an analysis of trends in foreign exploration and exploitation legislation and in Governmental intervention, see **Page 84.** The author discusses various legal requirements, maximum permit areas, duration of permits, fiscal incentives and directional growth of government control.

☐ **Petroleum demand is highest ever . . .** U. S. oil producers and refiners are benefiting this year from a normal growth in use of petroleum products. The markets are absorbing unprecedented volumes of petroleum products and industry operations will need to continue at record levels during remainder of the year in meeting consumer requirements. Total demand for all oils was 6.7 percent higher in first six months of '53 than in same period of 1952. **Page 96.**

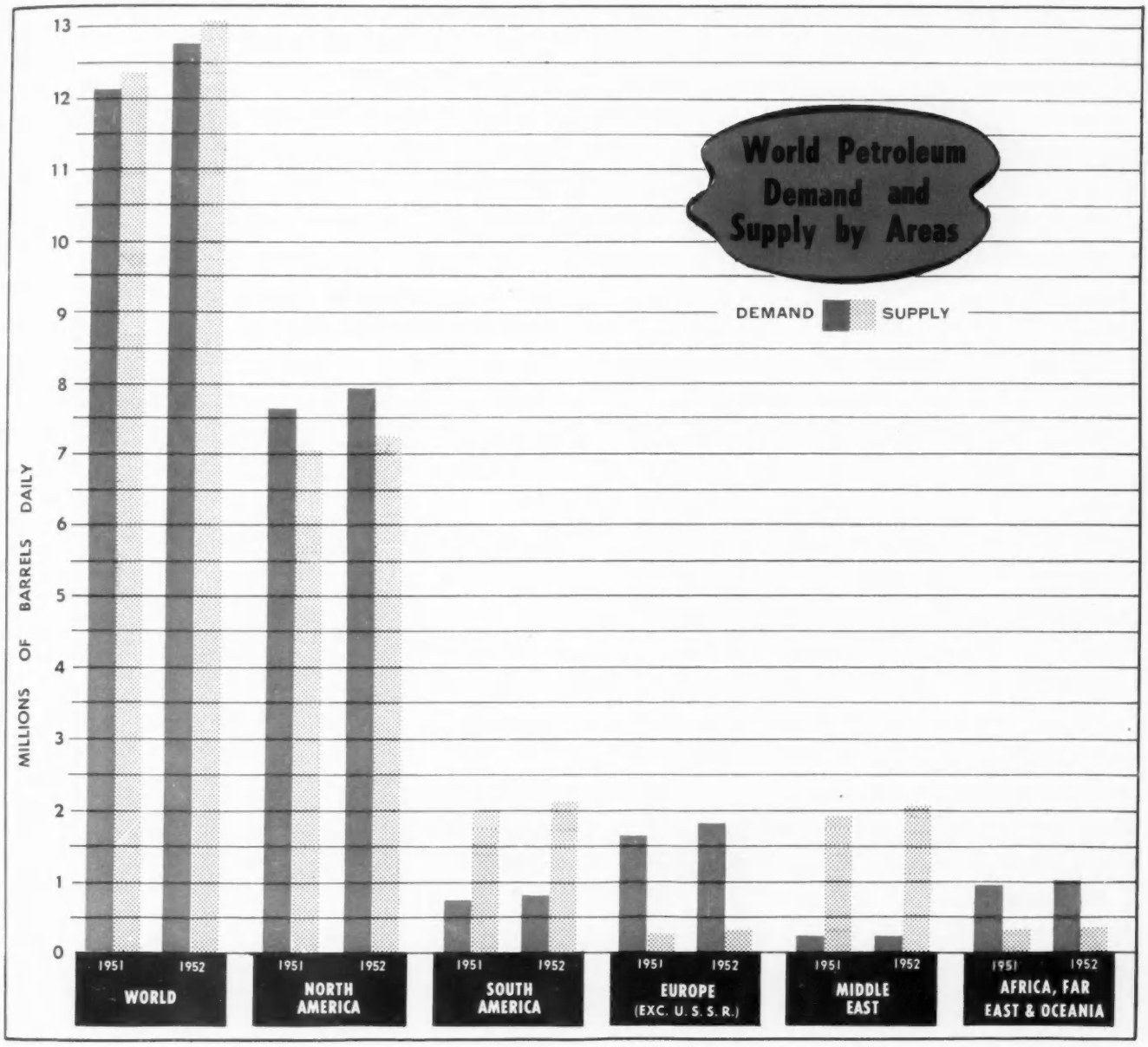
☐ **Record U. S. drilling** is forecast in 1953 . . . completion of 48,155 wells, drilling of 192,949,755 feet of hole and the completion of 10,468 wildcat tests are indicated in WORLD OIL's annual mid-year drilling survey. See **Page 102.**

☐ **Records fell in Western Canada** during 1952 as the area continued to bask in the oil spotlight. On an average, a new gas or oil field was discovered every other day. Estimates of 1953 expenditures are put at $1 million a day. Expenditures in 1952 exceeded $250 million. Drilling was at a new high . . . production climbed . . . reserves and demand were up. A roundup of the complete Canadian picture, **Page 108.**

☐ **The U. S. has withdrawn** its request for appropriations to carry out an exploration program in Northern Alaska. The project will be abandoned. The Navy expressed the belief that the area contains substantial reserves and indicated the program might be resumed later. Meanwhile the search for oil in Alaska turned south as Phillips Petroleum Company and the U. S. Interior Department concluded a pact to explore approximately 1 million acres on the gulf of Alaska. **Page 132.**

☐ **Cuban crude production down . . .** to lowest level since pre-war years. Domestic production accounts for only 5 percent of the Cuban petroleum demand and the petroleum law of the nation is one that encourages private capital investment, although there are many handicaps in the form of special taxes. **Page 136.**

Inserted in this issue . . . 1953 oil maps of Venezuela and Colombia



World Supply and Demand . . . Supply continues to grow faster than demand. Difference near three-year high at mid-1953.

By **ROBERT E. SPANN,** WORLD OIL Staff

THE WORLD'S SUPPLY of petroleum continues to grow at a faster rate than demand. This has been the steadily increasing trend over the past two and one-half years, and at mid-year indications were that the balance of supply over demand in 1953 may be the largest of the three years. Supply exceeded demand by 291,300 barrels daily in 1952 and by 244,400 barrels per day in 1951.

This world surplus of petroleum has developed during the period since the shut-down of oil operations in Iran, which in 1950 supplied 6 percent of the world's total crude. It poses a serious threat to the price structure of crude in all major producing areas.

World crude production in the first half of 1953 was at a level of more than 12.8 million barrels daily and the combined world supply of crude and gas liquids amounted to 13.6 million barrels a day. It amounted to an increase of more than one-half million barrels, or 4 percent, over the 1952 rate, a slightly higher gain than the indicated increase in world consuming rates in the first half of the year. A jump of 16 percent in Middle East production in the first part of the year over 1952 to a record of 2,425,-

000 barrels daily accounted for nearly all of the increase.

While the rate of demand growth has shown a substantial slow down in recent years, world requirements for petroleum in 1953 are expected to be slightly ahead of the peak demand of 12,782,600 barrels daily reached in 1952. Last year's demand represented an increase of 634,100 barrels per day, or 5.2 percent, over 1951, or just half the expansion in world demand experienced in 1951 over 1950. The rise in demand in 1950 over 1949 had been even higher at 12.5 percent.

As has been the trend in recent years, Western Europe had the sharpest increase in demand in 1952 of any major consuming area, but the expansion in requirements of 8.9 percent over 1951 was considerably below the 16.5 percent growth in demand in 1951 over 1950 and the rise of 17.5 percent in 1950 over 1949. It gave definite confirmation that Western Europe's industrial activity was back to normal after a rapid postwar recovery.

The expansion in Western Europe's demand so far in 1953 has been at a more modest rate than 1952.

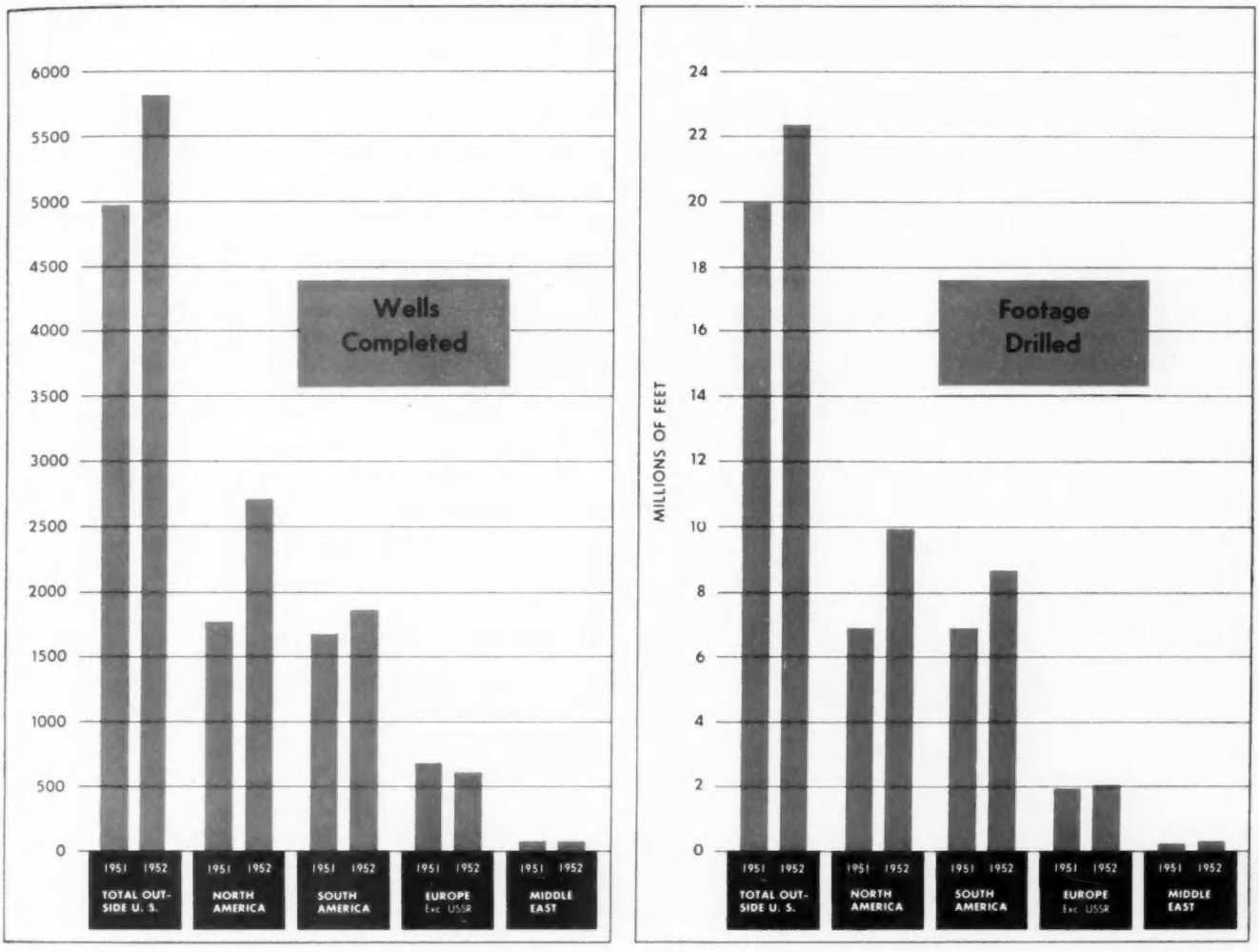
Petroleum Demand and Supply by Areas, 1949-1950-1951-1952

(Barrels Per Day)

		DOMESTIC SUPPLY					PERCENT OF WORLD TOTAL	
	Domestic Demand	Crude Oil	Natural Gasoline Etc.	Total	Excess Supply Over Demand	Excess Demand Over Supply	Domestic Demand	Domestic Supply
1952:								
United States	7,281,000	6,262,200	606,000	6,868,200	.....	412,800	56.96	52.53
Other North America	651,400	378,000	6,700	384,700	.....	266,700	5.09	2.94
Total North America	7,932,400	6,640,200	612,700	7,252,900	.....	679,500	62.05	55.47
Caribbean Area	275,200	1,966,300	10,800	1,977,100	1,701,900	.....	2.15	15.12
Other South America	544,900	126,000	6,000	132,000	.....	412,900	4.27	1.01
Total South America	820,100	2,092,300	16,800	2,109,100	1,289,000	.....	6.42	16.13
Europe (Excluding U.S.S.R.)	1,822,300	230,200	71,800	302,000	.....	1,520,300	14.25	2.31
U.S.S.R.	943,000	936,500	28,000	964,500	21,500	.....	7.38	7.38
Africa	335,700	47,400	2,000	49,400	.....	285,700	2.63	0.38
Middle East	239,000	2,076,700	.....	2,076,700	1,837,700	.....	1.87	15.88
Far East and Oceania	690,100	314,300	5,000	319,300	.....	370,800	5.40	2.45
TOTAL WORLD	12,782,600	12,337,600	736,300	13,073,900	291,300	.....	100.00	100.00
1951:								
United States	7,041,000	6,149,100	562,000	6,711,100	.....	329,900	57.95	54.15
Other North America	593,400	340,600	6,300	346,900	.....	246,500	4.89	2.80
Total North America	7,634,400	6,489,700	568,300	7,058,000	.....	576,400	62.84	56.95
Caribbean Area	259,200	1,865,400	9,100	1,874,500	1,615,300	.....	2.13	15.13
Other South America	502,400	124,000	5,500	129,500	.....	372,900	4.14	1.04
Total South America	761,600	1,989,400	14,600	2,004,000	1,242,400	.....	6.27	16.17
Europe (Excluding U.S.S.R.)	1,673,100	188,400	60,000	249,000	.....	1,424,100	13.77	2.01
U.S.S.R.	858,000	787,700	26,000	813,700	.....	44,300	7.06	6.57
Africa	336,900	46,500	2,000	48,500	.....	288,400	2.77	0.39
Middle East	255,200	1,924,100	.....	1,924,100	1,668,900	.....	2.10	15.53
Far East and Oceania	629,300	292,900	2,700	295,600	.....	333,700	5.19	2.38
TOTAL WORLD	12,148,500	11,718,700	674,200	12,392,900	244,400	.....	100.00	100.00
1950:								
United States	6,499,000	5,402,300	499,000	5,901,300	.....	597,700	59.25	53.84
Other North America	524,000	275,900	5,100	281,000	.....	243,000	4.78	2.56
Total North America	7,023,000	5,678,200	504,100	6,182,300	.....	840,700	64.03	56.40
Caribbean Area	225,800	1,630,000	6,100	1,636,100	1,410,300	.....	2.06	14.93
Other South America	469,200	116,900	4,800	121,700	.....	347,500	4.28	1.11
Total South America	695,000	1,746,900	10,900	1,757,800	1,062,800	.....	6.34	16.04
Europe (Excluding U.S.S.R.)	1,440,000	164,600	53,200	217,800	.....	1,222,200	13.13	1.99
U.S.S.R.	770,000	740,200	24,000	764,200	.....	5,800	7.02	6.97
Africa	276,100	45,100	1,500	46,600	.....	229,500	2.52	0.43
Middle East	250,000	1,742,900	.....	1,742,900	1,492,900	.....	2.28	15.90
Far East and Oceania	513,500	247,400	1,900	249,300	.....	264,200	4.68	2.27
TOTAL WORLD	10,967,600	10,365,300	595,600	10,960,900	.....	6,700	100.00	100.00
1949:								
United States	5,792,400	5,046,400	428,500	5,474,900	.....	317,500	59.42	54.19
Other North America	478,200	224,900	8,200	233,100	.....	245,100	4.91	2.41
Total North America	6,270,600	5,271,300	436,700	5,708,000	.....	562,600	64.33	56.60
Caribbean Area	212,900	1,459,300	4,900	1,464,200	1,251,300	.....	2.18	15.67
Other South America	397,500	113,100	5,200	118,300	.....	279,200	4.08	1.21
Total South America	610,400	1,572,400	10,100	1,582,500	972,100	.....	6.26	16.88
Europe (Excluding U.S.S.R.)	1,226,700	160,500	26,000	186,500	.....	1,040,200	12.59	1.72
U.S.S.R.	707,000	638,800	22,000	660,800	.....	46,200	7.25	6.86
Africa	236,800	43,800	1,000	44,800	.....	192,000	2.43	0.47
Middle East	211,800	1,401,300	.....	1,401,300	1,189,500	.....	2.17	15.05
Far East and Oceania	484,000	225,000	2,200	227,200	.....	256,800	4.97	2.42
TOTAL WORLD	9,747,300	9,313,100	498,000	9,811,100	63,800	.....	100.00	100.00

SOURCE: Demand and natural gasoline production figures from C. J. Bauer, Petroleum Economist, Standard Oil Company (New Jersey). Crude production figures by WORLD OIL.

Drilling Activity Outside of U. S. in 1951-52



World Completions and Footage . . . New records set

but wells drilling at close of 1952 less than in 1951.

By AL REESE, WORLD OIL Staff

More wells were completed and more footage was drilled during 1952 than in the previous year; however, fewer wells were drilling at the close of the year than at the end of 1951.

In 1952, 50,395 wells were completed, an increase of 768 wells—or 1.5 percent—from the previous year, at which time 49,627 wells were completed. Footage drilled, a better gauge of drilling activity, climbed 13,177,500 feet from the previous year's total of 193,395,582 feet to 206,573,082 feet—an upsurge of 6.8 percent. This was 33,472,225 feet more than the total drilled during the year 1950.

At year's end, 4804 wells were drilling, 745 wells or 13.5 percent below the number drilling at the close of 1951.

Of the 1952 completions, 27,150 discovered oil, 3521 found gas and 19,429 wells were failures. These figures reflect a rising trend in each category from the previous year—1039 more successful oil well completions, 99 more gassers and 1076 additional dry holes.

The U. S. drilling industry chalked up 44,563 completions during 1952, eight less than during the previous year. However, even with eight fewer wells, footage last year amounted to 184,131,723 feet, a rise of 9,849,473 feet from the total reached in 1951. Results of this activity led to 23,638 oil wells, 3166 gas wells and 17,759 dry holes. At the close of the year, 4649 wells were drilling, as compared with 5182 at the same period the previous year.

With 1952 completions totaling 49,381 wells and footage drilled of 203,710,760 feet, the Western Hemisphere easily led in the world's drilling activity. Outside the U. S., Canada's oil industry played the leading role, followed by Venezuela. Canada completed 890 more wells last year than in 1951 for a total of 2434, and footage

climbed 2,962,401 feet from the previous year to 8,778,271 feet. This increased tempo resulted in 1215 oil wells, 234 gas wells and 985 dry holes. Venezuela's 1952 record showed 1313 completions, as compared with 1206 in 1951, and footage of 7,227,744 feet, as compared to 5,432,680 feet the previous year. A total of 1161 oil wells were completed last year in the leading South American country, in addition to 27 gassers and 125 failures.

Germany's increased emphasis on wildcats upped its completions last year to 437 from 1951's 394 to give it the No. 1 position in Europe. Reports, of course, from Russia and its satellite nations were lacking in any detail. Germany's total footage last year ran 418,390 feet ahead of the previous year to reach 1,529,684 feet and to account for 307 oil wells, four gassers and 126 failures.

Morocco again led in African drilling operations—with the completion of 70 wells. Twenty-two resulted in crude producers and the remainder were dry. Footage amounted to 290,000 feet, a marked drop from 409,759 feet drilled during the previous year.

DRILLING ACTIVITY IN 1951 AND 1952 BY COUNTRIES

COUNTRY	Total Wells Completed in 1951	Footage Drilled in 1951 Completions	Wells Drilling End of 1951	WELLS COMPLETED IN 1952					Wells Drilling End of 1952
				Oil	Gas	Dry	TOTAL Wells	TOTAL Footage	
NORTH AMERICA, Except United States:									
Alaska	20	57,116	2	1	2	3	6	20,582	n.a.
Canada	1,544	5,815,870	n.a.	1,215	234	985	2,434	8,778,271	n.a.
Mexico	268	1,061,950	48	147	22	144	313	1,239,754	58
Total North America, Except United States	1,832	6,934,936	50	1,363	258	1,132	2,753	10,038,607	58
WEST INDIES:									
Cuba	1	11,218	1	4	.....	6	10	20,200	n.a.
Trinidad	142	637,938	23	177	.....	5	182	736,535	n.a.
Total West Indies	143	649,156	24	181	.....	11	192	756,735	n.a.
SOUTH AMERICA:									
Argentina	n.a.	n.a.	n.a.	[8]25	81	85	831	n.a.	n.a.
Bolivia	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Brazil	n.a.	85,498	n.a.	n.a.	n.a.	n.a.	58	125,326	87
Chile	57	n.a.	5	12	7	10	29	213,480	n.a.
Colombia	100	465,351	n.a.	n.a.	.....	n.a.	68	333,017	n.a.
Ecuador	54	192,468	.....	n.a.	n.a.	n.a.	135	233,953	n.a.
Peru	220	843,188	29	157	3	79	239	650,175	n.a.
Venezuela	1,206	[7]5,432,680	98	1,161	27	125	1,313	7,227,744	n.a.
Total South America	1,640	7,019,185	132	1,355	38	219	1,873	8,783,695	87
EUROPE:									
Albania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Austria	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Czechoslovakia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Denmark	31	10,247	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1
France	176	474,100	22	17	1	59	77	378,000	n.a.
Germany	394	1,111,294	75	307	4	126	437	1,529,684	n.a.
Great Britain	1	4,353	n.a.	.....	.....	2	2	12,909	3
Hungary	12	86,975	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Italy	162	506,146	7	7	52	12	71	249,915	n.a.
Netherlands	33	104,134	1	38	.....	5	43	n.a.	n.a.
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Roumania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
U.S.S.R.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Yugoslavia	3	18,450	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total Europe	782	2,315,699	105	369	57	204	630	2,170,508	4
AFRICA:									
Algeria	53	142,010	5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Egypt	12	41,612	[3]3	6	n.a.	n.a.	11	n.a.	n.a.
Morocco	100	409,759	5	22	.....	48	70	290,000	n.a.
Tunisia	.....	.....	.....	.....	1	5	6	50,600	n.a.
Total Africa	165	593,381	13	28	1	53	87	340,600	n.a.
MIDDLE EAST:									
Bahrain Island	8	20,430	1	n.a.	n.a.	n.a.	7	.....	6
Iran	8	n.a.	n.a.	.....	.....	.....	.....	.....	n.a.
Iraq	[4]14	123,635	7	n.a.	n.a.	n.a.	13	n.a.	n.a.
Kuwait	21	89,985	3	21	.....	2	23	n.a.	n.a.
Qatar	[6]6	44,173	3	n.a.	n.a.	n.a.	9	n.a.	n.a.
Saudi Arabia	32	215,779	9	35	.....	5	40	273,751	n.a.
Turkey	4	n.a.	1	5	.....	4	9	41,325	n.a.
Total Middle East	93	494,002	24	61	.....	11	101	315,076	6
FAR EAST:									
British Borneo	31	185,099	4	20	.....	4	24	n.a.	n.a.
China (including Formosa)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
India and Pakistan	1	8,610	3	2	1	3	6	35,678	n.a.
Japan	235	400,834	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Indonesia	131	493,495	12	126	.....	22	148	n.a.	n.a.
Netherlands New Guinea	n.a.	n.a.	n.a.	7	.....	8	15	n.a.	n.a.
Papua	3	[5]18,935	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Philippines	.....	.....	.....	.....	.....	3	3	460	n.a.
Total Far East	401	1,106,973	19	155	1	40	196	36,138	n.a.
OCEANIA:									
Australia	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Zealand	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Outside United States	**5,056**	**19,113,332**	**367**	**3,512**	**355**	**1,670**	**5,832**	**22,441,359**	**155**
UNITED STATES	44,571	174,282,250	5,182	23,638	3,166	17,759	44,563	184,131,723	4,649
WORLD TOTAL	**[1]49,627**	**193,395,582**	**5,549**	**27,150**	**3,521**	**19,429**	**[2]50,395**	**206,573,082**	**4,804**

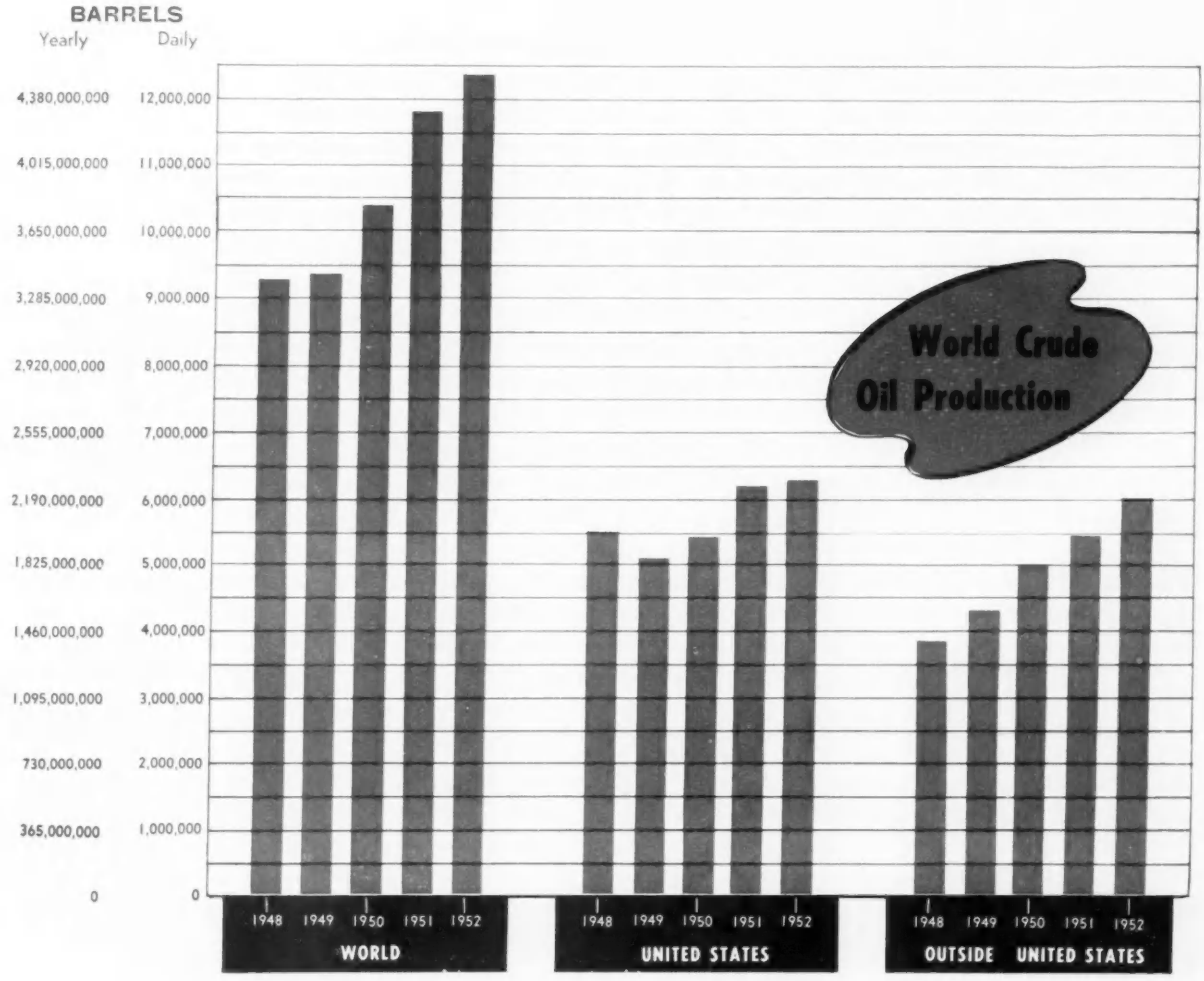
[1] Total includes 336 wells not listed as oil, gas or dry. [2] Total includes 295 wells not listed as oil, gas or dry. [3] Additional testing pending.
[4] Includes one observation well. [5] Footage for the dry hole not included. [6] All drilling operations suspended at end of March, 1952.
[7] Includes footage drilled in wells not completed at the end of the year. [8] Diadema Argentina de Petroleo only.

World Crude Production . . . up 238,346,000 barrels for a record total of 4,515,730,000 in 1952. U. S. up 1.8 percent.

WORLD CRUDE production in 1952 climbed 238,346,000 barrels from 1951 for a record of 4,515,730,000 barrels. This yield pushed the cumulative production figure to 74,403,149,000 barrels. Last year's flow was the result of a daily average production of 12,337,812 barrels, 618,950 barrels—5.3 percent—greater than the 1951 daily average output.

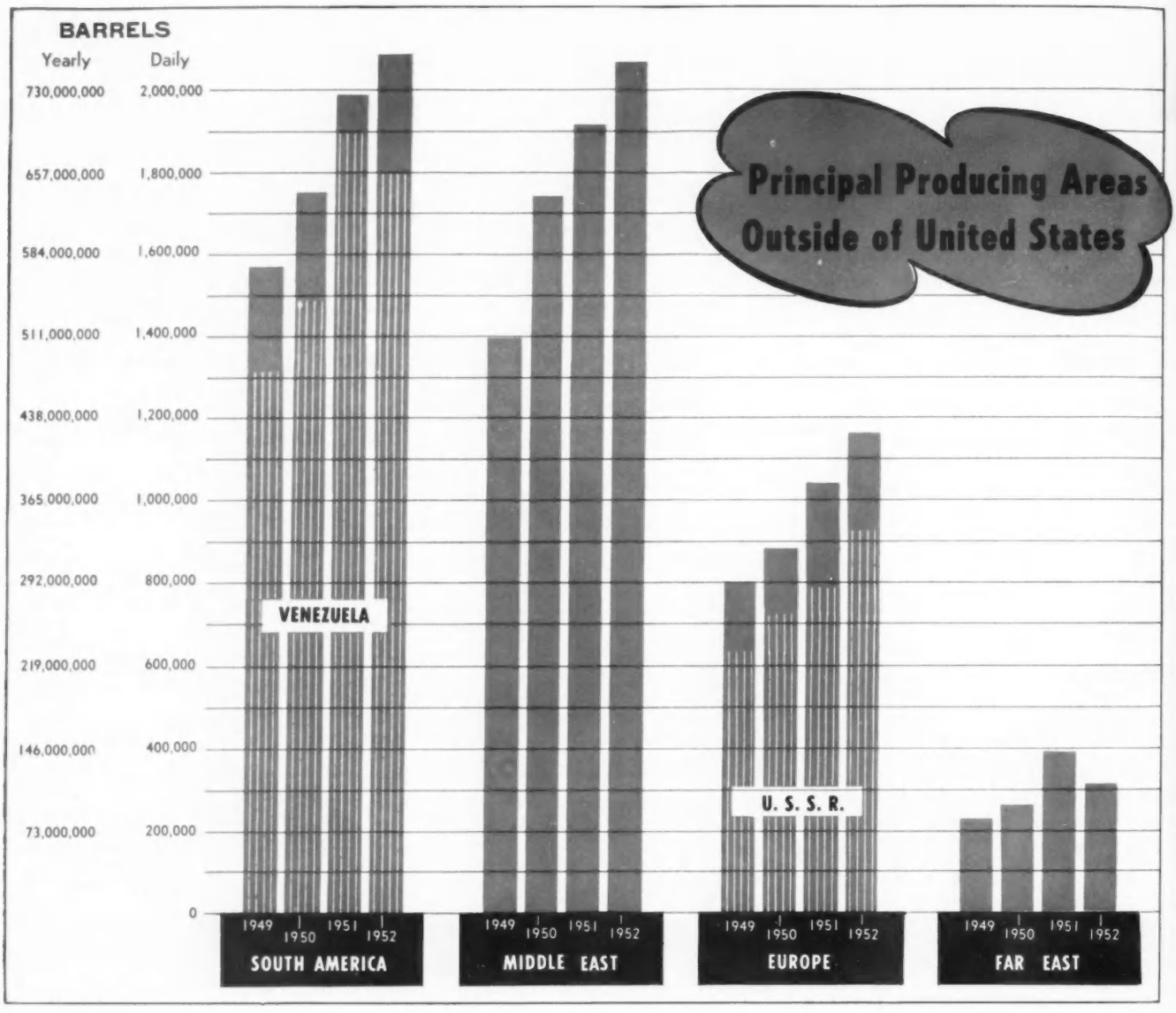
U. S. production of 2,291,997,000 barrels was established on a daily average yield of 6,262,194 barrels—an increase of 1.8 percent from the previous year—and accounted for a 50.76 percent share in total world crude output. This was tantamount to a 1.71 percent drop in the nation's share of world production from 1951. Total U. S. cumulative production to Jan. 1, 1953, was 45,453,760,000 barrels, 61.1 percent of the world's cumulative yield.

Again, North America was the world's No. 1 producing region. Its percentage share of 1952 world yield was 53.82, a decline of 1.55 percent from the previous year. This dip almost matched that which occurred in 1950, when the North American percent of world crude production dropped 1.82 percent from 1949. Canada's significant increase in crude yield helped offset declines in both Cuba and Mexico. Canadian annual production climbed from 47,112,000



(All Figures in Barrels)

YEAR	WORLD		UNITED STATES		OUTSIDE U.S.A.		YEAR	WORLD		UNITED STATES		OUTSIDE U.S.A.	
	Annual Total	Daily Average	Annual Total	Daily Average	Annual Total	Daily Average		Annual Total	Daily Average	Annual Total	Daily Average	Annual Total	Daily Average
1939	2,086,160,000	5,715,500	1,264,962,000	3,465,000	821,198,000	2,249,900	1946	2,745,474,000	7,521,800	1,733,939,000	4,750,500	1,011,525,000	2,771,300
1940	2,149,821,000	5,873,800	1,353,214,000	3,367,300	796,607,000	2,176,500	1947	3,022,075,000	8,279,700	1,856,987,000	5,087,600	1,165,088,000	3,192,100
1941	2,220,657,000	6,084,000	1,402,228,000	3,841,700	818,429,000	2,242,300	1948	3,433,021,000	9,405,500	2,020,185,000	5,519,600	1,412,836,000	3,885,900
1942	2,093,100,000	5,734,500	1,386,645,000	3,799,000	706,455,000	1,935,500	1949	3,399,290,000	9,313,100	1,841,940,000	5,046,400	1,557,350,000	4,266,700
1943	2,256,637,000	6,182,600	1,505,613,000	4,125,000	751,034,000	2,057,600	1950	3,783,332,000	10,365,300	1,971,845,000	5,402,300	1,811,487,000	4,963,000
1944	2,592,371,000	7,102,400	1,677,904,000	4,584,400	914,467,000	2,518,000	1951	4,277,300,000	11,718,700	2,244,404,000	6,149,100	2,032,896,000	5,569,600
1945	2,594,798,000	7,109,000	1,713,655,000	4,694,900	881,143,000	2,414,100	1952	4,515,730,000	12,337,800	2,291,997,000	6,262,200	2,223,733,000	6,075,600



barrels in 1951 to 61,240,000 barrels last year, reflecting a 29.1 percent rise in daily average output of 37,590 barrels—to a record high of 166,664 barrels. Thus, Canada produced 1.35 percent of total world output last year, up .25 percent from 1951. Cumulative production in Canada at the close of the year totaled 299,199,000 barrels.

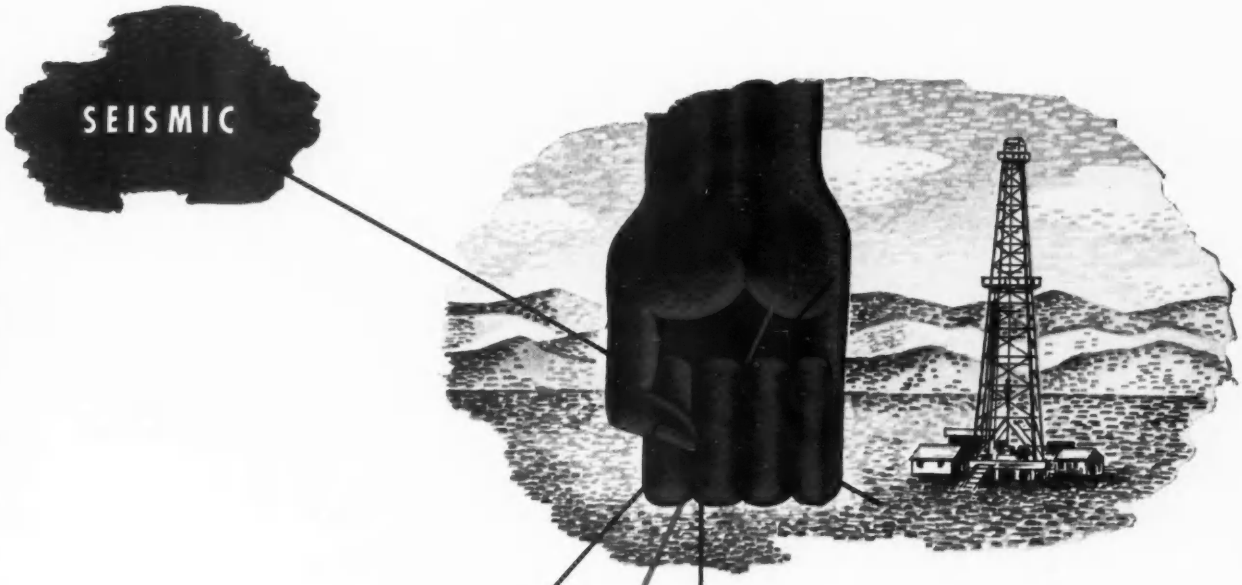
Cuba's daily average yield declined from 323 barrels the previous year to 273 barrels last year for a 15.5 percent slip. Annual production for the year amounted to 100,000 barrels. Mexico dropped .1 percent with total output for 1952 of 77,068,000 barrels, resulting from daily average production of 211,101 barrels. That gave Mexico a 1.71 percent share of the world's production last year and cumulative output of 2,636,185,000 barrels.

Venezuela increase. Venezuela, South America's No. 1 and the world's No. 2 crude producing region, accounted for 86 percent of the crude produced in South America last year. Its total yearly output of 660,223,000 barrels resulted from daily average of 1,803,886 barrels—5.8 percent more than produced during the previous year. As a result, the nation's share of world production climbed .07 percent to 14.62 percent.

Chile, meanwhile, pyramided production from 759,000 barrels the previous year to 909,000 barrels last year. Daily average yield reflected a 19.5 percent increase, or 406 barrels. Ecuador, South America's No. 2 gainer over 1951 boosted its daily average yield 6.7 percent, from 7438 barrels to 7935 barrels. Brazil and Trinidad were the only crude producers which lost ground last year. Brazil's annual yield fell 36,000 barrels, and Trinidad's declined 70,000 barrels.

Total South American output for 1952 was 765,801,000 barrels, up 39,674,000 barrels from the previous year. That was accounted for by climbing daily average production, which rose from 1,989,389 barrels to 2,092,350 barrels, or 5.2 percent. That record gave South America a 16.95 percent share in total world yield for 1952, and sent its cumulative production up to 8,870,899,000 barrels—11.92 percent of world cumulative output.

Europe, including USSR and the satellite countries, accounted for the greatest increase in production. Its yield rose from 356,332,000 barrels in 1951 to 427,044,000 barrels, resulting from a 19.5 percent increase in daily average production. The increase amounted to 190,522 barrels daily. Volume-wise, the USSR, excluding



28 YEARS...

of world-wide

Geophysical Experience

go into

every job

we undertake

Petty

GEOPHYSICAL ENGINEERING COMPANY

SAN ANTONIO, TEXAS

SEISMIC • GRAVITY • MAGNETIC SURVEYS

Sakhalin, contributed the lion's share of this upturn as its daily production spiraled to 936,533 barrels from 787,671 barrels the previous year—18.9 percent up. Thus, USSR's share in the world's total production climbed .87 percent to 7.59 percent. Cumulative production at the close of 1952 was 7,196,987,000 barrels, or almost 10 percent of the world's total.

Egypt, which produced 16,373,000 barrels of Africa's total for 1952 of 17,345,000 barrels, accounted for a .2 percent rise in daily average production from 44,655 barrels in 1951 to 44,736 barrels last year. Algerian activities reflected Africa's greatest percentage-wise hike—158.5 percent from 1951 on a daily average production in 1952 of 716 barrels, up 439 barrels from the previous year.

Middle East Activity. The Middle East in 1952 had the third largest share in total world production for the year—16.83 percent, .12 percent less than Europe's. Its cumulative yield was shoved to 5,472,533,000 barrels on the basis of 1952 production of 760,106,000 barrels, as compared to 702,314,000 barrels during the previous year. Daily average production climbed 7.9 percent to 2,076,725 barrels. In 1952, the daily flow totaled 1,924,149 barrels.

Iraq, third largest Middle East producer, reported an increase in daily average output of 128 percent —from 168,586 barrels in 1951 to 384,326 barrels last year. On that daily yield was built the record of 140,663,000 barrels for the entire year, as compared to 61,534,000 barrels the previous year. Thus Iraq's share in total world output for the year climbed from 1.44 percent in 1951 to 3.12 percent last year. The nation's cumulative yield jumped to 691,150,000 barrels, tantamount to .93 percent of the world cumulative total.

Saudi Arabia was the area's No. 1 producer last year, with total yield of 301,861,000 barrels, up 23,899,000 barrels from the previous year. An 8.3 percent increase in daily average production was effected—from 761,540 barrels in 1951 to 824,756 barrels in 1952. That allowed the kingdom an increased share in total world production from the previous year, amounting to 6.69 percent. By the close of the year, Saudi Arabian wells had produced more than a billion and a quarter barrels of petroleum since oil was first discovered on the Dammam dome.

Trends in World Crude Oil Production, by Countries, and Cumulative Production Through 1952

CONTINENT and COUNTRY	ANNUAL PRODUCTION (Thousands of Barrels)		DAILY AVERAGE PRODUCTION (Actual Barrels)			YEAR'S PRODUCTION As Percent of World		CUMULATIVE PRODUCTION TO JANUARY 1, 1953 (Thousands of Barrels)	
	1951	1952	1951	1952	% Diff. '51-'52	1951	1952	Total	As % of World
North America	**2,368,723**	**2,430,405**	**6,489,652**	**6,640,232**	**+ 2.3**	**55.37**	**53.82**	**48,391,643**	**65.04**
Canada	47,112	61,240	129,074	166,664	+ 29.1	1.10	1.35	299,199	0.40
Cuba	118	100	323	273	— 15.5	.....	.....	2,499	.....
Mexico	77,089	77,068	211,203	211,101	— 0.1	1.80	1.71	2,636,185	3.54
United States	2,244,404	2,291,997	6,149,052	6,262,194	+ 1.8	52.47	50.76	45,453,760	61.10
South America	**726,127**	**765,801**	**1,989,389**	**2,092,350**	**+ 5.2**	**16.98**	**16.95**	**8,870,899**	**11.92**
Argentina	24,407	24,668	66,868	67,399	+ 0.8	0.57	0.54	507,253	0.68
Bolivia	514	529	1,408	1,446	+ 2.6	0.01	0.01	6,630	0.01
Brazil	756	720	2,072	1,967	— 5.1	0.02	0.02	2,455	.....
Chile	759	909	2,079	2,485	+ 19.5	0.02	0.02	2,298	.....
Colombia	38,148	38,983	104,516	106,509	+ 1.9	0.89	0.86	574,409	0.77
Ecuador	2,715	2,904	7,438	7,935	+ 6.7	0.06	0.07	54,707	0.08
Peru	16,109	16,403	44,134	44,818	+ 1.5	0.38	0.36	434,673	0.58
Trinidad	20,532	20,462	56,252	55,906	— 0.6	0.48	0.45	453,758	0.61
Venezuela	622,187	660,223	1,704,622	1,803,886	+ 5.8	14.55	14.62	6,834,716	9.19
Europe	**356,332**	**427,044**	**976,252**	**1,166,774**	**+ 19.5**	**8.33**	**9.46**	**9,170,745**	**12.32**
Albania	2,401	2,800	6,578	7,651	+ 16.3	0.06	0.07	22,664	0.03
Austria	15,010	20,000	41,123	54,644	+ 32.9	0.35	0.44	99,081	0.13
Czechoslovakia	370	590	959	1,611	+ 68.0	0.01	0.01	5,673	0.01
France	2,117	2,550	5,800	6,967	+ 20.1	0.05	0.06	19,964	0.03
Germany	9,566	12,200	26,208	33,332	+ 27.2	0.22	0.27	128,417	0.17
Great Britain	335	388	918	1,061	+ 15.6	0.01	0.01	5,533	0.01
Hungary	4,500	5,000	12,329	13,661	+ 10.8	0.11	0.11	59,024	0.08
Italy	136	75	373	205	— 45.1	.....	.....	3,774	.....
Netherlands	4,964	4,972	13,600	13,585	+ 0.1	0.12	0.11	24,562	0.03
Poland	1,298	1,962	3,556	5,362	+ 50.8	0.03	0.04	283,158	0.38
Roumania	27,000	32,000	73,973	87,430	+ 18.2	0.63	0.71	1,316,586	1.77
U.S.S.R. (Excl. Sakhalin)	287,500	342,776	787,671	936,533	+ 18.9	6.72	7.59	7,196,987	9.68
Yugoslavia	1,155	1,731	3,164	4,732	+ 49.6	0.02	0.04	5,342	.....
Africa	**16,959**	**17,345**	**46,464**	**47,391**	**+ 1.9**	**0.40**	**0.39**	**187,991**	**0.26**
Algeria	101	262	277	716	+158.5	.....	0.01	569	.....
Egypt	16,299	16,373	44,655	44,736	+ 0.2	0.38	0.36	185,285	0.25
Morocco	559	710	1,532	1,939	+ 26.6	0.02	0.02	2,137	0.01
Asia, Total	**809,242**	**875,127**	**2,217,102**	**2,391,043**	**+ 7.8**	**18.92**	**19.37**	**7,781,810**	**10.45**
Asia, Middle East	**702,314**	**760,196**	**1,924,149**	**2,076,725**	**+ 7.9**	**16.42**	**16.83**	**5,472,533**	**7.35**
Bahrain	10,994	11,004	30,121	30,000	— 0.4	0.26	0.24	142,913	0.19
Iran	128,503	7,777	352,063	21,248	— 94.0	3.00	0.17	2,520,983	3.39
Iraq	61,534	140,663	168,586	384,326	+128.0	1.44	3.12	691,150	0.93
Kuwait	205,127	273,439	561,992	747,100	+ 32.9	4.80	6.05	763,146	1.02
Qatar	18,097	25,249	49,581	68,986	+ 39.1	0.42	0.56	55,553	0.08
Saudi Arabia	277,962	301,861	761,540	824,756	+ 8.3	6.50	6.69	1,208,429	1.74
Turkey	97	113	266	309	+ 16.2	.....	.....	359	.....
Asia, Far East	**106,928**	**115,021**	**292,953**	**314,318**	**+ 7.3**	**2.50**	**2.54**	**2,309,277**	**3.10**
Borneo, British (Sarawak and Brunei)	37,468	38,251	102,652	104,511	+ 1.8	0.88	0.84	355,966	0.48
Burma	644	1,000	1,764	2,732	+ 54.9	0.02	0.03		
India	1,900	1,990	5,205	5,437	+ 4.5	0.04	0.04	350,981	0.47
Pakistan	1,505	1,385	4,123	3,786	— 8.2	0.04	0.03		
China	728	732	1,995	2,000	+ 0.3	0.02	0.02	6,216	0.01
Formosa	24	15	66	41	— 37.9	.....	.....	347	.....
Japan	2,306	2,134	6,318	5,829	— 7.7	0.05	0.05	102,885	0.14
Indonesia	55,353	62,514	151,652	170,804	+ 12.6	1.29	1.38	1,384,642	1.86
Sakhalin (Part of U.S.S.R.)	7,000	7,000	19,178	19,178	.....	0.16	0.15	108,240	0.14
Australia-New Zealand	**1**	**8**	**3**	**22**	**+633.3**	.....	0.01	**61**	**0.01**
TOTAL WORLD	**4,277,384**	**4,515,730**	**11,718,862**	**12,337,812**	**+ 5.3**	**100.00**	**100.00**	**74,403,149**	**100.00**

Advanced Exploration Co., Inc.
Amerada Petroleum Corporation
Ayrshire Exploration Company
Bank of Mexico
Beaver Geophysical Services, Ltd.
Berg Geophysical Company
Brazos Exploration Service
Broussard Exploration Co., Inc.
California Standard Co., The
Canadian Gulf Oil Company
Delhi Oil Corporation
Donnally Exploration Company
Donnally Geophysical Company
Donnally Seismograph Company
Electronic Logging and Velocity Co., Ltd.
Empire Geophysical, Inc.
Evangeline Seismic Company
Farney Exploration Company, Ltd.
Fenwick-Walczak Company
Frontier Geophysical, Ltd.
Geochemical Surveys
Geocraft, Ltd.
Geophysical Associates
Geophysical Prospecting Co., Ltd.
Gulf Oil Corporation
Hoard Exploration Company
Hooks Exploration Company
Humble Oil & Refining Company
Independent Exploration Co.
Inter-American Geophysical Co., Ltd.
Japanese Government
Kerr-McGee Oil Industries, Inc.
Louisiana Oil Exploration Co.
Mayes-Bevan Company
McCollum Exploration Company
Midwest Exploration Company
Montex Exploration Company
Nance Exploration Company
Neuman, L. J. Company
New Mexico Institute of Mining and Tech.
Northwest Seismic Surveys, Ltd.
Pan American Geophysical Co.
Petroleum Geophysical Company
Plymouth Oil Company
Portable Seismograph, Inc.
Precision Exploration Company
Purcell Exploration Service
Robert H. Ray Company
Rayflex Exploration Company
Research Explorations, Inc.
V. T. Reynolds
Seismograph Service Corporation
Seismic Ventures Limited
Seismotech, Ltd.
Sinclair Oil & Gas Company
Sinclair Research Laboratories, Inc.
Sohio Petroleum Company
States Exploration Company
Subsurface Exploration, Ltd.
The Texas Company
Texas Seismograph Company
Tulsa Exploration Company
Unger Exploration Company
Universal Seismic Surveys, Ltd.
U. S. Air Force Cambridge Research Centr.
Velocity Surveys, Ltd.
Weiss Geophysical Corporation of Canada
West Provincial Seismic, Ltd.
Western Geophysical Company
Whitsitt Geophysical Company
Zavod Za Geofizicka Ispitivanja

DO YOU KNOW
THE GEOPHYSICISTS
ASSOCIATED WITH THESE COMPANIES

These companies all have one thing in common: they all have **at least one complete set of portable or truck mounted** SIE Seismograph Instruments. If you know geophysicists with these companies, we would like for you to ask them for their personal opinion of SIE instruments . . . because these men have watched SIE Instruments get the records under good and bad conditions in practically every part of the world. That's why these **70 companies** have purchased **161 sets** of SIE Seismograph instruments in the past five years.

SIE

SOUTHWESTERN INDUSTRIAL ELECTRONICS CO.

2831 POST OAK ROAD • HOUSTON, TEXAS
434 SEVENTH AVE. EAST • CALGARY, ALBERTA
EDISON 40-1 • MEXICO, D. F.

World Crude Oil Production, By Countries, By Years (Part 1)

(Thousands of Barrels)

YEAR	WORLD TOTAL	Percent Produced by U.S.	NORTH AMERICA					SOUTH AMERICA										
			Canada	Mexico	United States	Cuba	Total North America	Argentina	Barbados	Bolivia	Brazil	Chile	Colombia	Ecuador	Peru	Trinidad	Venezuela	Total South America
1857	2																	
1858	4																	
1859	6	31			2		2											
1860	509	98			500		500											
1861	2,131	99			2,114		2,114											
1862	3,092	99	12		3,057		3,069											
1863	2,763	94	83		2,611		2,694											
1864	2,304	92	90		2,116		2,206											
1865	2,716	92	110		2,498		2,608											
1866	3,899	92	175		3,598		3,773											
1867	3,709	90	190		3,347		3,537											
1868	3,990	91	200		3,646		3,846											
1869	4,696	90	220		4,215		4,435											
1870	5,799	91	250		5,261		5,511											
1871	5,730	91	270		5,205		5,475											
1872	6,877	92	308		6,293		6,601											
1873	10,838	91	365		9,894		10,259											
1874	11,933	92	169		10,927		11,096											
1875	9,977	88	220		8,788		9,008											
1876	11,051	83	312		9,133		9,445											
1877	15,754	85	312		13,350		13,662											
1878	18,417	84	312		15,397		15,709											
1879	23,601	84	575		19,914		20,489											
1880	30,018	88	350		26,286		26,636											
1881	31,993	86	275		27,661		27,936											
1882	35,704	85	275		30,350		30,625											
1883	30,255	78	250		23,450		23,700											
1884	35,969	67	250		24,218		24,468											
1885	26,765	59	250		21,859		22,109											
1886	47,243	59	584		28,065		28,649											
1887	47,807	59	526		28,283		28,809											
1888	52,165	53	695		27,612		28,307											
1889	61,507	57	705		35,164		35,869											
1890	76,633	60	795		45,824		46,619											
1891	91,100	60	755		54,293		55,048											
1892	88,739	57	780		50,515		51,295											
1893	92,038	53	798		48,431		49,229											
1894	89,337	55	829		49,344		50,173											
1895	103,692	51	726		52,892		53,618											
1896	114,199	53	727		60,960		61,687								47			47
1897	121,992	50	710		60,476		61,186								71			71
1898	124,979	44	758		55,364		56,122								71			71
1899	131,147	44	808		57,071		57,879								89			89
1900	149,137	43	913		63,621		64,534								274			274
1901	167,440	41	757	10	69,389		70,156								275			275
1902	181,809	49	531	40	88,767		89,338								287			287
1903	194,879	52	487	75	100,461		101,023								278			278
1904	217,948	54	553	126	117,081		117,760								290			290
1905	215,091	63	634	251	134,717		135,602								373			373
1906	213,263	59	569	502	126,494		127,565								531			531
1907	263,957	63	789	1,005	166,095		167,889	B							751			751
1908	285,287	63	528	3,933	178,527		182,988	12							945	B		957
1909	298,709	61	421	2,714	183,171		186,306	18							1,411	57		1,486
1910	327,763	64	316	3,634	209,557		213,507	20							1,258	143		1,421
1911	344,361	64	291	12,553	220,449		233,293	13							1,465	285		1,763
1912	352,443	63	242	16,558	222,935		239,736	47							1,752	437		2,236
1913	385,345	64	228	25,696	248,446		274,370	131							2,071	504		2,706
1914	407,544	65	215	26,235	265,763		292,213	276							1,837	644		2,757
1915	432,033	65	215	32,911	281,104		314,230	513							2,579	750		3,842
1916	457,500	66	198	40,546	300,767		341,511	867							2,593	929		4,389
1917	502,891	67	214	55,293	335,316		390,823	1,218						57	2,577	1,602	120	5,574
1918	503,515	71	305	63,828	355,928		420,061	1,353						C60	2,527	2,082	333	6,355
1919	555,875	68	241	87,073	378,367		465,681	1,331						C60	2,628	1,841	425	6,285
1920	688,884	64	196	157,069	442,929		600,194	1,651						C60	2,817	2,083	457	7,068
1921	766,002	62	188	193,398	472,183		665,769	2,036					67	C60	3,699	2,354	1,433	9,649
1922	858,898	65	179	182,278	557,531		739,988	2,866					323	C60	5,314	2,445	2,201	13,209
1923	1,015,736	72	170	149,585	732,407		882,162	3,400					425	87	5,699	3,051	4,201	16,863
1924	1,014,318	70	161	139,678	713,940		853,779	4,639					445	C100	8,379	4,057	9,042	26,662
1925	1,068,933	71	332	115,515	763,743		879,590	6,336					1,007	160	9,232	4,387	19,687	40,809
1926	1,096,823	70	364	90,421	770,874		861,659	7,851					6,444	214	10,762	4,971	36,911	67,153
1927	1,262,582	71	477	64,121	901,129		965,727	8,630					15,014	537	10,127	5,380	63,134	102,822
1928	1,324,774	68	624	50,151	901,474		952,249	9,070					19,897	1,084	12,006	7,684	105,749	155,490
1929	1,485,867	68	1,117	44,688	1,007,323		1,053,128	9,391		B			20,385	1,381	13,422	8,716	137,472	190,767
1930	1,410,037	64	1,522	39,530	898,011		939,063	9,002		56			20,346	1,553	12,449	9,419	136,669	189,494
1931	1,372,532	62	1,543	33,039	851,081		885,663	11,709		25			18,237	1,762	10,089	9,744	116,613	168,179
1932	1,309,677	60	1,044	32,805	785,159		819,008	13,139		44			16,414	1,597	9,899	10,126	116,154	167,760
1933	1,442,146	63	1,145	34,001	905,656	23	940,825	13,691		112			13,158	1,620	13,257	9,561	117,720	169,119
1934	1,522,288	60	1,417	38,172	908,065	28	947,682	14,024		159			17,341	1,637	16,314	10,894	136,103	196,472
1935	1,654,495	60	1,447	40,241	996,596	47	1,038,331	14,297		164			17,598	1,732	17,067	11,671	148,254	210,783
1936	1,791,546	61	1,500	41,028	1,099,687	62	1,142,277	15,458		105			18,756	1,942	17,593	13,237	154,794	221,885
1937	2,039,231	63	2,944	46,907	1,279,160	33	1,329,044	16,355		122			20,599	2,161	17,457	15,503	186,230	258,427
1938	1,988,041	61	6,966	38,506	1,214,355	78	1,259,905	17,076		226			21,582	2,246	15,839	17,737	188,174	262,880
1939	2,086,160	60.6	7,838	42,898	1,264,962	112	1,315,810	18,613		215			23,857	2,313	13,508	19,270	206,470	284,246
1940	2,149,821	62.9	8,591	44,036	1,353,214	142	1,405,983	20,609		288	2		25,593	2,349	12,126	22,227	185,570	268,764
1941	2,220,657	63.1	10,134	42,196	1,402,228	150	1,454,708	21,873		235	3		24,553	1,557	11,935	20,506	228,430	309,092
1942	2,093,100	66.2	10,365	34,815	1,386,645	151	1,431,976	23,704	2	308	33		10,487	2,278	13,629	22,069	147,675	220,185
1943	2,256,637	66.7	10,052	35,163	1,505,613	107	1,550,935	27,714	2	334	48		13,261	2,315	14,654	21,385	177,631	257,344
1944	2,592,289	64.7	10,099	38,203	1,677,904	109	1,726,315	24,230	1	314	58		22,291	2,967	14,389	22,139	257,046	343,435
1945	2,594,697	66.0	8,483	43,547	1,713,655	149	1,765,834	22,881	2	382	79		22,449	2,664	13,744	21,093	323,156	406,450
1946	2,745,430	63.2	7,586	49,235	1,733,939	269	1,791,029	20,604	1	363	67		22,118	2,323	12,468	20,233	388,486	466,663
1947	3,022,139	61.4	7,692	56,284	1,856,987	300	1,921,263	21,846	B	377	97		24,794	2,282	12,764	20,521	434,905	517,586
1948	3,433,213	58.8	12,287	58,508	2,020,185	159	2,091,139	23,734	B	464	144		23,792	2,563	14,069	20,111	490,015	574,892
1949	3,404,099	54.1	21,305	60,910	1,841,940	206	1,924,361	22,589		678	109		29,722	2,617	14,790	20,617	482,316	573,438
1950	3,783,332	52.1	28,412	72,117	1,971,845	156	2,072,530	23,361	B	616	339	630	26,323	2,690	15,027	20,299	548,343	637,628
1951*	4,277,320	52.5	47,112	77,089	2,244,404	118	2,368,723	24,407	B	514	756	759	38,148	2,715	16,109	20,532	622,187	726,127
1952*	4,515,730	50.7	61,240	77,068	2,291,997	100	2,430,405	24,668	B	529	720	909	38,983	2,904	16,403	20,462	660,223	765,801
Total	74,403,149	61.1	299,199	2,636,185	45,453,760	2,499	48,391,643	507,253	8	6,630	2,455	2,298	574,409	54,707	434,673	453,758	6,834,716	8,870,899

* **WORLD OIL** from private sources; other data from U. S. Bureau of Mines. B Less than 1,000 barrels. C Estimated production.

Now! **STARTERS FOR CSCO PUMPING ENGINES**

Designed especially for CSCO Engines . . . all models . . . Air Cooled Engine or Battery Motor. Call or write for complete information.

CSCO

PUMPING ENGINES

the C-46 *the* C-66 *the* C-96

CONTINENTAL

SERVING THE OIL AND GAS INDUSTRIES

THE CONTINENTAL SUPPLY COMPANY

General Offices: DALLAS, TEXAS

Representatives in All Principal Oil Fields of the World

World Crude Oil Production, By Countries, By Years (Part 2)

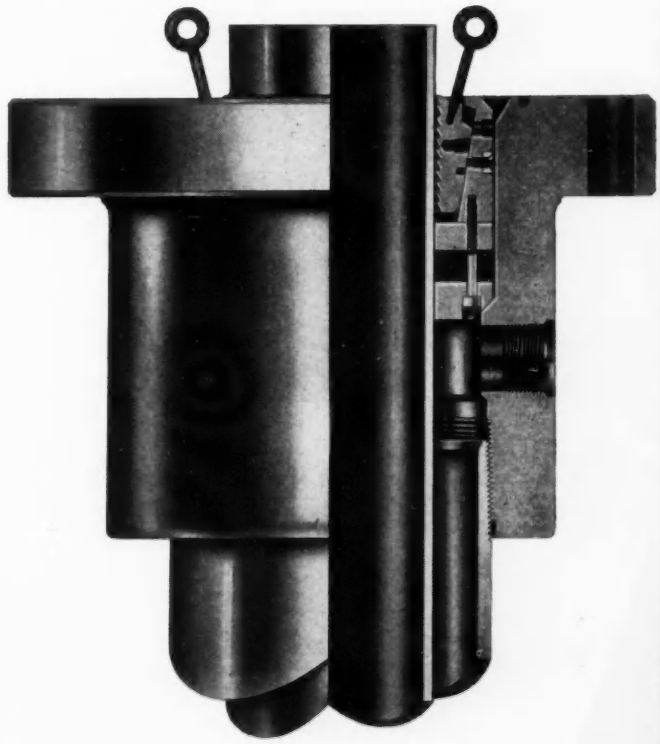
(Thousands of Barrels)

	EUROPE													AFRICA			
Year	Albania	Austria	Czecho-slovakia	Great Britain	France	Ger-many	Hun-gary	Italy	Nether-lands	Poland	Rou-mania	[F]U.S.S.R. (Russia)	Yugo-slavia	[F]Total Europe	Egypt	Algeria	Morocco	Total Africa
1857	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	2	.....	.....	.....	.....
1858	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	4	.....	.....	.....	.....
1859	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	4	.....	.....	.....	.....
1860	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	.....	.....	9	.....	.....	.....	.....
1861	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	17	.....	.....	17	.....	.....	.....	.....
1862	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	23	.....	.....	23	.....	.....	.....	.....
1863	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	28	41	.....	69	.....	.....	.....	.....
1864	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	33	65	.....	98	.....	.....	.....	.....
1865	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	39	67	.....	108	.....	.....	.....	.....
1866	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	42	83	.....	125	.....	.....	.....	.....
1867	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	51	120	.....	172	.....	.....	.....	.....
1868	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	56	88	.....	144	.....	.....	.....	.....
1869	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	59	202	.....	261	.....	.....	.....	.....
1870	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	84	204	.....	288	.....	.....	.....	.....
1871	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	90	165	.....	255	.....	.....	.....	.....
1872	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	91	185	.....	276	.....	.....	.....	.....
1873	.....	.....	.....	.....	.....	.....	.....	[B]	.....	.....	104	475	.....	579	.....	.....	.....	.....
1874	.....	.....	.....	.....	.....	.....	.....	1	.....	150	103	583	.....	837	.....	.....	.....	.....
1875	.....	.....	.....	.....	.....	.....	.....	1	.....	158	108	697	.....	964	.....	.....	.....	.....
1876	.....	.....	.....	.....	.....	.....	.....	3	.....	164	111	1,321	.....	1,599	.....	.....	.....	.....
1877	.....	.....	.....	.....	.....	.....	.....	3	.....	170	108	1,801	.....	2,082	.....	.....	.....	.....
1878	.....	.....	.....	.....	.....	.....	.....	4	.....	176	109	2,401	.....	2,690	.....	.....	.....	.....
1879	.....	.....	.....	.....	.....	.....	.....	3	.....	215	110	2,761	.....	3,089	.....	.....	.....	.....
1880	.....	.....	.....	.....	.....	9	.....	2	.....	229	115	3,001	.....	3,356	.....	.....	.....	.....
1881	.....	.....	.....	.....	.....	29	.....	1	.....	287	122	3,601	.....	4,040	.....	.....	.....	.....
1882	.....	.....	.....	.....	.....	58	.....	2	.....	330	136	4,538	.....	5,064	.....	.....	.....	.....
1883	.....	.....	.....	.....	.....	27	.....	2	.....	365	139	6,002	.....	6,535	.....	.....	.....	.....
1884	.....	.....	.....	.....	.....	46	.....	3	.....	408	211	10,805	.....	11,473	.....	.....	.....	.....
1885	.....	.....	.....	.....	.....	41	.....	2	.....	465	193	13,925	.....	14,626	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	74	.....	2	.....	306	168	18,006	.....	18,556	.....	.....	.....	.....
1887	.....	.....	.....	.....	.....	74	.....	1	.....	344	182	18,368	.....	18,969	.....	.....	.....	.....
1888	.....	.....	.....	.....	.....	85	.....	1	.....	467	219	23,049	.....	23,821	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	68	.....	1	.....	515	298	24,609	.....	25,491	.....	.....	.....	.....
1890	.....	.....	.....	.....	.....	108	.....	3	.....	659	383	28,691	.....	29,844	.....	.....	.....	.....
1891	.....	.....	.....	.....	.....	109	.....	8	.....	631	488	34,573	.....	35,809	.....	.....	.....	.....
1892	.....	.....	.....	.....	.....	101	.....	18	.....	646	593	35,775	.....	37,133	.....	.....	.....	.....
1893	.....	.....	.....	.....	.....	100	.....	19	.....	693	535	40,457	.....	41,804	.....	.....	.....	.....
1894	.....	.....	.....	.....	.....	123	.....	21	.....	949	508	36,375	.....	37,976	.....	.....	.....	.....
1895	.....	.....	.....	.....	.....	121	.....	26	.....	1,453	576	46,140	.....	48,316	.....	.....	.....	.....
1896	.....	.....	.....	.....	.....	145	.....	18	.....	2,444	543	47,221	.....	50,371	.....	.....	.....	.....
1897	.....	.....	.....	.....	.....	166	.....	14	.....	2,226	571	54,399	.....	57,376	.....	.....	.....	.....
1898	.....	.....	.....	.....	.....	184	.....	15	.....	2,376	776	61,610	.....	64,961	.....	.....	.....	.....
1899	.....	.....	.....	.....	.....	192	.....	16	.....	2,314	1,426	65,955	.....	69,903	.....	.....	.....	.....
1900	.....	.....	.....	.....	.....	358	.....	12	.....	2,347	1,629	75,780	.....	80,126	.....	.....	.....	.....
1901	.....	.....	.....	.....	.....	314	.....	16	.....	3,251	1,678	85,168	.....	90,427	.....	.....	.....	.....
1902	.....	.....	.....	.....	.....	354	.....	19	.....	4,142	2,060	80,540	.....	87,115	.....	.....	.....	.....
1903	.....	.....	.....	.....	.....	446	.....	18	.....	5,235	2,763	75,591	.....	84,053	.....	.....	.....	.....
1904	.....	.....	.....	.....	.....	637	.....	26	.....	5,947	3,599	78,537	.....	88,746	.....	.....	.....	.....
1905	.....	.....	.....	.....	.....	561	.....	44	.....	5,766	4,421	54,960	.....	65,752	.....	.....	.....	.....
1906	.....	.....	.....	.....	.....	579	.....	54	.....	5,468	6,378	58,897	.....	71,376	.....	.....	.....	.....
1907	.....	.....	.....	.....	.....	757	.....	60	.....	8,456	8,118	61,851	.....	79,242	.....	.....	.....	.....
1908	.....	.....	.....	.....	.....	1,009	.....	51	.....	12,612	8,252	62,187	.....	84,111	.....	.....	.....	.....
1909	.....	.....	.....	.....	.....	1,019	.....	42	.....	14,933	9,327	65,970	.....	91,291	.....	.....	.....	.....
1910	.....	.....	.....	.....	.....	1,032	.....	51	.....	12,673	9,724	70,337	.....	93,817	.....	.....	.....	.....
1911	.....	.....	.....	.....	.....	1,017	.....	75	.....	10,519	11,108	66,184	.....	88,903	21	.....	.....	21
1912	.....	.....	.....	.....	.....	1,031	.....	54	.....	8,535	12,976	68,019	.....	90,615	214	.....	.....	214
1913	.....	.....	.....	.....	.....	857	.....	47	.....	7,818	13,555	62,834	.....	85,111	98	.....	.....	98
1914	.....	.....	.....	.....	.....	781	.....	40	.....	6,436	12,827	67,020	.....	87,104	753	1	.....	754
1915	.....	.....	.....	.....	.....	703	.....	44	.....	5,352	12,030	68,548	.....	86,677	212	4	.....	216
1916	.....	.....	.....	.....	.....	656	.....	51	.....	6,587	8,945	65,817	.....	82,056	404	8	.....	412
1917	.....	.....	.....	.....	[G]	642	.....	41	.....	6,228	3,721	63,072	.....	73,704	943	9	.....	952
1918	.....	.....	.....	.....	363	270	.....	35	.....	6,032	8,730	27,168	.....	42,598	1,935	7	.....	1,942
1919	.....	.....	48	2	334	265	.....	35	.....	6,096	6,618	31,752	.....	45,150	1,517	5	.....	1,522
1920	.....	.....	69	3	356	246	.....	35	.....	5,607	7,435	25,430	.....	39,181	1,042	4	.....	1,046
1921	.....	.....	94	3	389	274	.....	32	.....	5,167	8,368	28,968	.....	43,295	1,255	3	.....	1,258
1922	.....	.....	120	1	496	319	.....	31	.....	5,227	9,843	35,692	.....	51,729	1,188	9	.....	1,197
1923	.....	.....	74	1	494	346	.....	34	.....	5,402	10,867	39,147	.....	56,365	1,054	9	.....	1,063
1924	.....	.....	76	2	497	406	.....	39	.....	5,657	13,369	45,355	.....	65,401	1,122	11	.....	1,133
1925	.....	.....	158	3	459	541	.....	61	.....	5,960	16,650	52,448	.....	76,280	1,226	12	.....	1,238
1926	.....	.....	150	2	478	653	.....	41	.....	5,844	23,314	64,311	.....	94,793	1,188	9	.....	1,197
1927	.....	.....	112	2	504	663	.....	47	.....	5,342	26,368	77,018	.....	110,056	1,267	8	.....	1,275
1928	.....	.....	94	1	512	630	.....	46	.....	5,492	30,773	[D]84,745	.....	122,295	1,842	8	.....	1,850
1929	.....	.....	93	.....	535	704	.....	45	.....	4,988	34,758	[D]99,507	.....	140,630	1,868	20	.....	1,888
1930	.....	.....	157	[B]	523	1,182	.....	59	.....	4,904	41,624	[D]125,555	.....	174,004	1,996	16	.....	2,012
1931	.....	.....	134	[E]	520	1,606	.....	124	.....	4,662	49,127	162,842	.....	219,015	2,038	[E]	.....	2,038
1932	.....	.....	126	[E]	530	1,608	.....	208	.....	4,116	53,815	154,367	.....	214,770	1,895	[E]	7	1,902
1933	11	.....	122	[E]	562	1,665	.....	204	.....	4,072	54,020	154,840	.....	215,496	1,663	[E]	7	1,670
1934	10	.....	178	[E]	557	2,187	.....	151	.....	3,913	62,063	174,318	.....	243,377	1,546	[E]	6	1,552
1935	41	44	133	[E]	541	2,996	.....	119	.....	3,812	61,310	182,386	2	251,384	1,301	[E]	4	1,305
1936	273	50	127	[E]	503	3,115	.....	123	.....	3,789	63,659	186,206	1	257,846	1,278	[E]	4	1,282
1937	619	221	123	[E]	502	3,176	16	110	.....	3,716	52,452	193,241	4	254,180	1,196	[E]	22	1,218
1938	752	383	130	[E]	513	3,861	288	101	.....	3,763	48,487	204,956	9	263,243	1,581	[E]	27	1,608
1939	934	1,240	120	.....	500	4,487	1,103	91	.....	3,898	45,648	216,866	10	274,897	4,666	[E]	27	4,693
1940	1,497	2,808	163	124	496	7,371	1,881	85	.....	3,891	43,168	218,600	10	280,094	6,505	[E]	27	6,532
1941	1,334	4,238	182	223	414	6,303	3,183	95	.....	1,793	40,517	238,150	10	296,443	8,546	[E]	27	8,573
1942	1,601	5,899	271	605	463	5,191	5,037	101	.....	2,794	42,094	227,470	10	291,536	8,275	[E]	41	8,316
1943	1,001	7,478	200	839	356	4,973	6,347	86	1	3,500	39,182	200,750	10	264,723	8,953	.....	39	8,992
1944	344	8,218	185	703	300	6,154	6,277	55	12	3,000	26,191	275,000	220	326,649	9,416	4	32	9,452
1945	267	3,074	91	532	202	3,935	5,018	53	41	750	34,772	148,953	200	197,888	9,406	2	26	9,434
1946	1,000	5,734	196	412	368	4,539	5,146	83	435	866	31,434	157,673	160	208,046	9,070	1	20	9,091
1947	2,000	6,285	210	351	356	4,032	4,330	81	1,478	951	28,552	187,463	290	236,379	8,627	1	21	8,649
1948	1,500	6,149	204	323	370	4,489	3,647	71	3,443	1,039	34,000	218,000	270	273,505	13,398	1	100	13,499
1949	2,188	6,100	292	338	411	5,947	3,791	71	4,314	1,205	33,700	237,700	470	296,527	15,997	2	136	16,135
1950	2,101	6,150	280	340	893	7,904	3,460	72	4,898	1,205	32,000	270,163	780	330,246	16,111	52	295	16,458
1951*	2,401	15,010	350	335	2,117	9,566	4,500	72	4,964	1,298	27,000	287,500	1,155	356,268	16,299	101	559	16,959
1952*	2,800	20,000	590	388	2,550	12,200	5,000	75	4,972	1,962	32,000	342,776	1,731	427,044	16,373	262	710	17,345
Total	22,664	99,081	5,653	5,533	19,964	128,417	59,024	3,774	24,562	283,158	1,316,586	7,196,987	5,342	9,170,677	185,285	569	2,137	187,991

* **WORLD OIL** from private sources; other data from U. S. Bureau of Mines. [B] Less than 1,000 barrels. [D] Year ended September 30. [E] No more data available
[F] Includes fields in Russian Asia other than Sakhalin. [G] France's earlier production credited to Germany.

meet the new king of the medium duty casing heads

The new O-C-T "C-20" Casing head design has eliminated one of the major causes of casing head troubles in the medium duty field. Here's how: the O-C-T "C-20" employs a resilient seal ring which provides an effective seal *automatically* for the life of the well in any climate. This means that the C-20 design puts the packing element under constant compression, regardless of temperature changes. In addition, the design eliminates the "human factor" present when compression is applied manually. Check the other features, advantages, and safety this new O-C-T head brings to the field . . . then write for the C-20 Brochure containing Engineering Nomograph for Calibrating Casing Loads and Pressures . Or ask your O-C-T Representative for details. Available through more than 700 supply store locations.



O-C-T C-20 CASING HEADS

THE FIRST AND ONLY QUICK-SETTING, POSITIVE-SEALING WELL HEADS DESIGNED ESPECIALLY TO ELIMINATE OPEN HOLE HAZARDS IN MEDIUM DEPTH WELLS.

1. Seals and suspends casing before blowout preventers are removed.
2. Saves hours of costly rig time — simplifies installation.
3. Sealing element, slip bowl and slips are assembled at the O-C-T plant as a single unit that may be wrapped quickly around the casing, latched and dropped into place from the derrick floor.
4. It employs a resilient seal ring which provides an effective seal for the life of the well in any climate.

Oil Center Tool Co.

P. O. Box 3091 Houston, Texas

Export Representatives: Sterling Areas — Le Grand, Sutcliff & Gell, Ltd., Rochester, Kent, England. Address Export Inquiries for All Other Countries to P. O. Box 3091, Houston 1, Texas

World Crude Oil Production, By Countries, By Years (Part 3)

(THOUSANDS OF BARRELS)

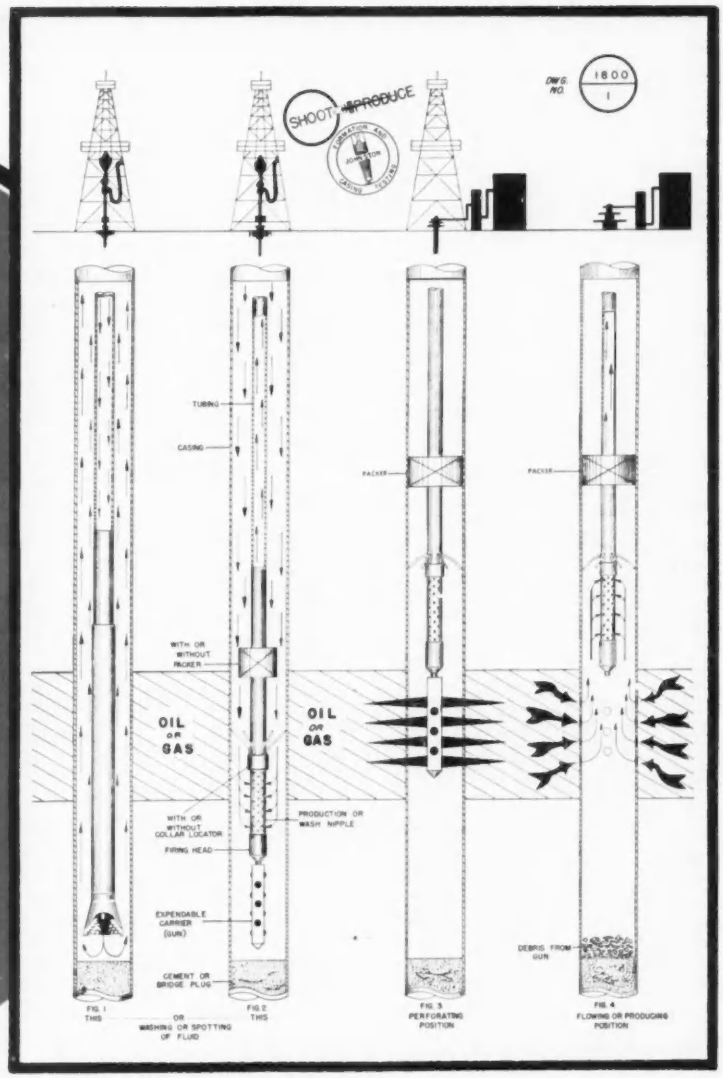
Year	ASIA — Middle East								ASIA — Far East										Australia-N.Z.	Rest of World
	Bahrain	Iran	Iraq	Kuwait	Qatar	Saudi Arabia	Turkey	Total Middle East	British Borneo	[E]Burma-India Pakistan: Burma	Pakistan	India	China	Formosa [H]	Japan	Indonesia	Sakhalin	Total Far East	[F]Total Asia		
1857																					
1858																					
1859																					
1860																					
1861																					
1862																					
1863																					
1864																					
1865																					
1866																					
1867																					
1868																					
1869																					
1870																					
1871																					
1872																					
1873																					
1874																					
1875															5			5	5		
1876															7			7	7		
1877															10			10	10		
1878															18			18	18		
1879															23			23	23		
1880															26			26	26		
1881															17			17	17		
1882															15			15	15		
1883															20			20	20		
1884															28			28	28		
1885															30			30	30		
1886															38			38	38		
1887															29			29	29		
1888															37			37	37		
1889												94			53			147	147		
1890												118			52			170	170		
1891												190			53			243	243		
1892												242			69			311	311		
1893												299			106	600		1,005	1,005		
1894												327			173	688		1,188	1,188		
1895												372			170	1,216		1,758	1,758		
1896												430			237	1,427		2,094	2,094		
1897												546			262	2,552		3,360	3,360		
1898												542			319	2,964		3,825	3,825		
1899												941			539	1,796		3,276	3,276		
1900												1,079			871	2,253		4,203	4,203		
1901												1,431			1,117	4,014		6,562	6,562		20
1902												1,617			996	2,430		5,043	5,043		26
1903												2,510			1,209	5,770		9,489	9,489		36
1904												3,385			1,219	6,508		11,112	11,112		40
1905												4,137			1,347	7,850		13,334	13,334		30
1906												4,016			1,564	8,181		13,761	13,761		30
1907												4,344			1,718	9,983		16,045	16,045		30
1908												5,047			1,871	10,283		17,201	17,201		30
1909												6,677			1,887	11,042		19,606	19,606		20
1910												6,138			1,829	11,031		18,998	18,998		20
1911												6,451			1,737	12,173		20,361	20,361		20
1912												7,117			1,659	10,846		19,622	19,622		20
1913		1,857						1,857	141			7,930			1,940	11,172		21,183	23,040		20
1914		2,910						2,910	318			7,410			2,636	11,422		21,786	24,696		20
1915		3,616						3,616	392			8,202			2,928	11,920		23,442	27,058		10
1916		4,477						4,477	629			8,491			2,963	12,547		24,630	29,107		25
1917		7,147						7,147	542			8,079			2,861	13,180		24,662	31,809		29
1918		8,623						8,623	504			8,188			2,441	12,778		23,911	32,534		25
1919		10,139						10,139	596			8,736			2,238	15,508		27,078	37,217		20
1920		12,230						12,230	1,020			8,375			2,221	17,529		29,145	41,375		20
1921		16,673						16,673	1,411			8,734			2,233	16,958	2	29,338	46,011		20
1922		22,247						22,247	2,849			8,529			2,055	17,066	7	30,506	52,753		22
1923		25,230						25,230	3,940			8,406			1,804	19,870	9	34,029	59,259		24
1924		32,373						32,373	4,163			8,416			1,814	20,473	80	34,946	67,319		24
1925		35,038						35,038	4,257			8,274			1,915	21,422	87	35,955	70,993		23
1926		35,842						35,842	4,942			8,011			1,785	21,243	181	36,162	72,004		17
1927		39,688	338					40,026	4,943			8,032			1,789	27,459	440	42,663	82,689		13
1928		43,461	713					44,174	[G]5,223			8,741			1,944	32,118	677	48,703	92,877		15
1929		42,145	798					42,943	5,290			8,747			2,023	39,279	[D]1,134	56,473	99,416		38
1930		45,828	913					46,741	4,907			8,292			1,950	41,729	[D]1,805	58,683	105,424		40
1931		44,376	830					45,206	3,854			8,200			2,050	35,539	2,734	52,377	97,583		54
1932		49,471	836					50,307	3,796			8,817			1,630	39,001	2,631	55,875	106,182		62
1933	31	54,392	917					55,340	4,490			8,743			1,455	42,606	2,338	59,632	114,972		71
1934	285	57,851	7,689					65,825	5,140			10,503			1,834	46,925	2,881	67,283	133,108		96
1935	1,265	57,273	27,408					85,946	5,546	7,181	[E]	2,038			2,249	47,171	2,545	66,730	152,676	5	4
1936	4,645	62,718	30,406			20		97,789	5,209	7,588	[E]	1,978			2,440	50,025	3,212	70,452	168,241	5	4
1937	7,762	77,804	31,836			65		117,467	6,009	7,848	[E]	2,162			2,488	56,724	3,656	78,887	196,354	4	4
1938	8,298	78,372	32,643			495		119,808	6,913	7,538	[E]	2,488			2,511	57,318	[C]3,821	80,589	200,397	4	4
1939	7,589	78,151	30,791			3,934		120,465	7,097	7,873	[E]	2,327	4		2,654	62,087	4,000	86,042	206,507	3	4
1940	7,074	66,317	24,225			5,075		102,691	7,047	7,731	[E]	2,302	10		2,639	62,011	4,000	85,740	188,431	3	14
1941	6,794	50,777	12,650			4,310		74,531	6,864	7,762	[E]	2,899	87	62	1,929	53,704	4,000	77,307	151,838	3	
1942	6,241	72,256	19,726			4,530		102,753	3,000	2,500	[E]	2,792	340	48	1,652	24,000	4,000	38,332	141,085	2	
1943	6,572	74,612	24,848			4,868		110,900	4,500	1,900	[E]	2,735	447	38	1,727	48,294	5,000	63,741	174,641	2	
1944	6,714	102,045	30,943			7,794		147,496	6,000	750	[E]	2,784	505	40	1,601	22,260	5,000	38,940	186,436	2	
1945	7,309	130,526	35,112			21,311		194,258	2,100	725	[E]	2,363	484	14	1,544	7,600	6,000	20,830	215,088	3	
1946	8,010	146,819	35,665	5,931		59,944		256,369	2,050	15	[E]	2,193	513	16	1,343	2,100	6,000	14,230	270,599	2	
1947	9,411	154,998	35,834	16,225		89,852		306,320	12,970	59	356	1,863	374	22	1,276	8,020	[C]7,000	31,940	338,260	2	
1948	10,915	190,384	26,115	46,500		142,853		416,767	20,124	341	490	1,875	533	23	1,122	31,900	[C]7,000	63,408	480,175	3	
1949	10,985	204,712	30,957	90,000	750	174,008	95	511,507	25,108	248	824	1,906	730	22	1,353	44,932	7,000	82,123	593,630	8	
1950	11,015	241,425	46,760	125,918	11,457	199,547	54	636,176	30,097	450	800	1,867	730	23	2,048	47,278	7,000	90,293	726,469	1	
1951*	10,994	128,503	61,534	205,127	18,097	277,962	97	702,314	37,468	644	1,505	1,900	728	24	2,306	55,353	7,000	106,928	809,242	1	
1952*	11,004	7,777	140,663	273,439	25,249	301,831	113	760,106	38,251	1,000	1,385	1,990	732	15	2,134	62,514	7,000	115,021	875,127	8	
Total	142,913	2,520,983	691,150	763,146	55,553	1,298,429	359	5,472,533	355,966		350,981		6,216	347	102,895	1,384,642	108,240	2,309,277	7,781,810	61	

*WORLD OIL from private sources; other data from U. S. Bureau of Mines. [C] Estimated production. [D] Year ended September 30. [E] Separation of British India and Burma prior to 1935 not available from U. S. Bureau of Mines data used here. Data by Dudley Stamp in "Petroleum Development and Technology, 1933", and in A.I.M.E. "Transactions" indicate cumulative through 1934 as follows: Burma 184,528, India 20,756. Pakistan included with India prior to 1947. [F] Exclusive of U.S.S.R fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [G] Beginning of production in Brunei. [H] Formosa included with Japan prior to 1941.

SHORT STORY

of how JOHNSTON'S SHOOT and PRODUCE METHOD... CONTRIBUTES to...

- MORE SAFETY
- MORE ECONOMY
- MORE EFFICIENCY
- DEEPER PENETRATION IN WELL COMPLETION



• With the Johnston Shoot and Produce equipment it is possible to lower hydrostatic pressure below reservoir pressure and position the desired fluid opposite the reservoir with the Christmas Tree and surface connections completed and the well fully under control before perforating.

Drawing No. 1800-1 shows the procedure used in the Shoot and Produce method. Fig. 1 shows casing has been cemented; the "Running-In-String" used for drilling and cleaning out to bottom can be used for displacing drilling mud with other fluids as oil and water, or spotting these fluids before pulling it to the surface. Fig. 2 shows a second method, with the Expendable Gun, Firing Head, Perforated Nipple, with or without Collar Locator, and with or without Production Packer in position for locating collars and displacing drilling mud with desirable fluids, or spotting other fluids. Fig. 3 shows perforating equipment in position, with or without packer, and Christmas Tree and surface equipment fully installed. The well is perforated by dropping the "Go-Devil" which shears Disc in Firing Head and exposes hydrostatic fluid pressure to piston in Firing Head which detonates the Expendable Gun. Fig. 4 shows production string and surface connections after perforation, with the well free to produce and debris on bottom.

JOHNSTON TESTERS, INC.

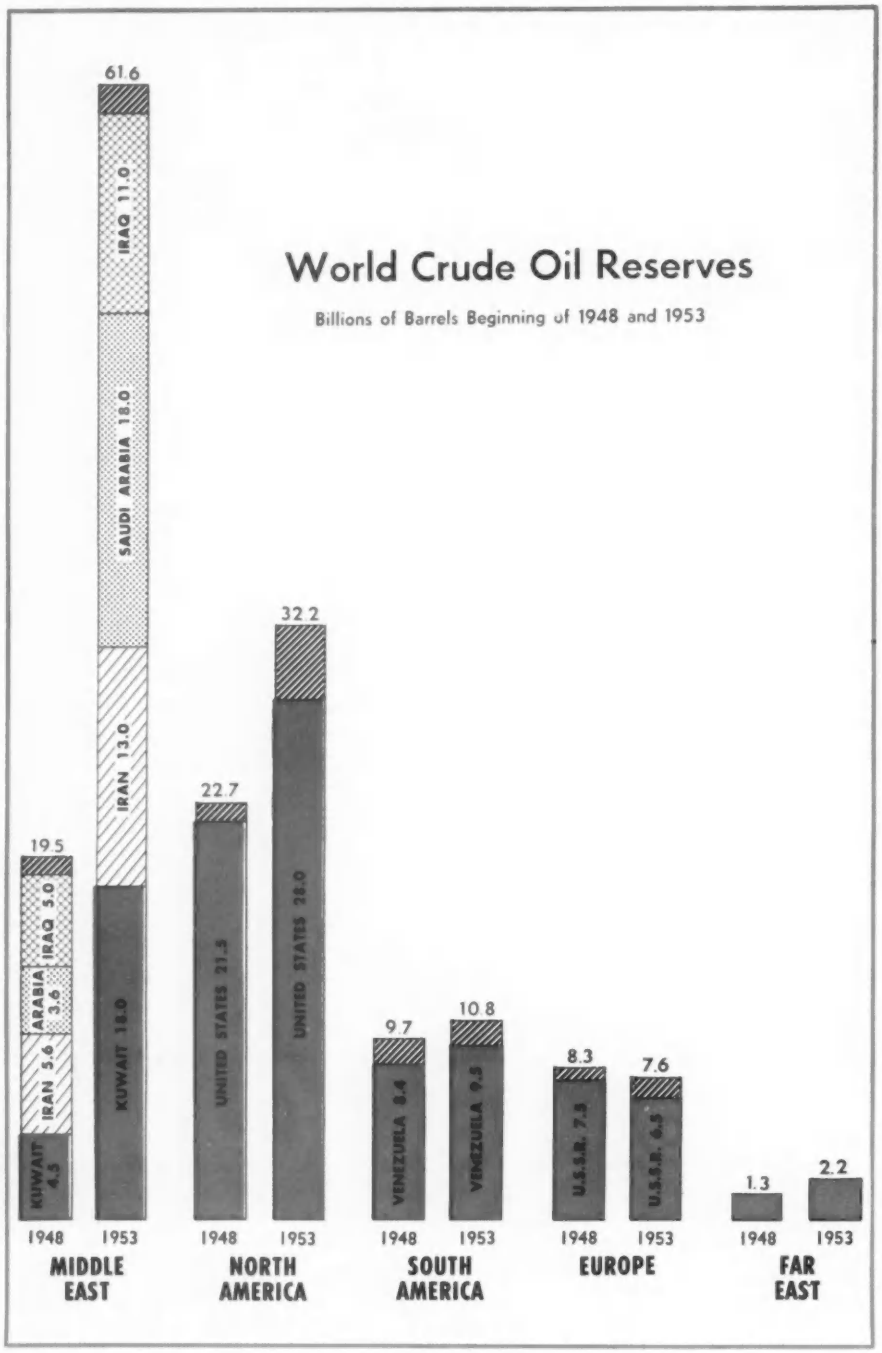
POST OFFICE BOX 165 HOUSTON, TEXAS

EXPORT DIVISION: 3035 Andrita St., Los Angeles 65, California

SERVICE BRANCHES IN ALL ACTIVE AREAS

There's a Johnston Service Representative Near You

FORMATION AND JOHNSTON CASING TESTING



World Crude Reserves . . . .

reach 114,516,000,000 barrels at start of 1953.

By DON KLIEWER, WORLD OIL Staff

AT THE CLOSE of 1952, during which its crude production climbed markedly, the U. S., the world's No. 1 petroleum producer, reversed the previous year's reserve trend. Output in 1952 climbed from 2,244,404,000 barrels in 1951 to 2,291,997,000 barrels—50.76 percent of the world's total yield. At that rate and without any discovery of new oil, U. S. reserves of 27,965,600,000 barrels amounted to a ratio of reserves to production of 12.2 years as of Jan. 1, 1953. That ratio amounted to an increase from 1951 of .05 year. In 1951, total U. S. annual production amounted to 52.51 percent of world output, with a ratio of reserves to production of 11.7 years.

Therefore, even without the discovery of new oil sources, U. S. reserves can supply domestic requirements at the 1952 rate for slightly more than a dozen years. This was indicated at year's end, with the increase of estimated proved reserves from 26,308,610,000 barrels in 1951 to 27,965,600,000 barrels in 1952. Paralleling this 1,656,944,000-barrel, or 6.2 percent, rise in reserves was a 47,593,000-barrel, or 2.1 percent, hike in domestic producing rate. As of Jan. 1, 1948, the U. S. had estimated reserves totaling 21,487,700,000 barrels which amounted then to slightly more than 34.84 percent of the world reserve figure.

Total world reserves as of Jan. 1, 1953, were 114,516,000,000 barrels. That was an increase from the same period the previous year of 14,038,440,000 barrels. In 1948, the world's total reserves amounted to 61,683,050,000 barrels.

Increase in Canada. Canada's reserves again spiralled—from 1.4 billion barrels as of Jan. 1, 1952, to 2 billion barrels at the beginning of 1953. This 600 million barrel upsurge boosted the nation's percentage of world reserves to 1.74 from 1.39 the previous year, or .35 percent. Canada's ratio of reserves to annual production of 61,240,000 barrels last year, equalled 32.7 years. The ratio at the beginning of 1952 amounted to 29.7 years. With continuing boom conditions and extensive drilling, the country's reserve and production figures were expected to rise sharply for 1953. Because of the lack of sufficient pipe lines, the domestic production potential had not been approached. Consequently, as pipe line facilities are increased, further development drilling will occur. That, of course, will, in turn, lead to increased reserve supplies.

Mexico, with estimated reserves of 2.2 billion barrels as of Jan. 1, 1953,

experienced an 822 million barrel rise from the previous year for a 1.92 percent share in total world reserves. That compares with a 1.71 percent share of annual world production gained by a 1952 output of 77,068,000 barrels. Mexico's reserves will allow production at the rate achieved last year for 28.5 years if no new oil were discovered.

The crude reserve picture in Alaska and Cuba remained unchanged from the previous year when Alaska's reserves were put at 500,000 barrels and Cuba's at 2 million barrels. Thus, the estimated crude reserves of North America, totaling 32,168,100,000 barrels, will allow an annual production at the rate of 1952's 2,430,405,000 barrels for 13.2 years should no further crude reserves be discovered. The continent's reserve figure accounts for 28.09 percent of the world total; production totaled 53.82 percent of the world's total.

South America. With total crude production in 1952 of 765,801,000 barrels, South American reserves were sufficient to enable the continuance of that production annually for 14 years. As of Jan. 1, 1953, Venezuela accounted for 9,453,600,000 barrels of that total. That is a drop in the country's reserves from the previous year of 546,400,000 barrels, and, on the basis of 1952 production of 660,223,000 barrels, would enable that production rate to continue for 14.3 years. Thus, with 14.62 percent of the world's total crude yield, Venezuela has an 8.26 percent share in world reserves.

Russian Share Big. Russia again accounted for the lion's share of European reserves as of Jan. 1, 1953, with 6.5 billion barrels, 5.67 percent of the world total, which reflected a billion-barrel decline from the same period in 1948. Production of 342,776,000 barrels during 1952 gave the Russians a ratio of reserves to annual production of an even 19 years.

Five-Year Comparison of Estimated World Crude Reserves, by Countries

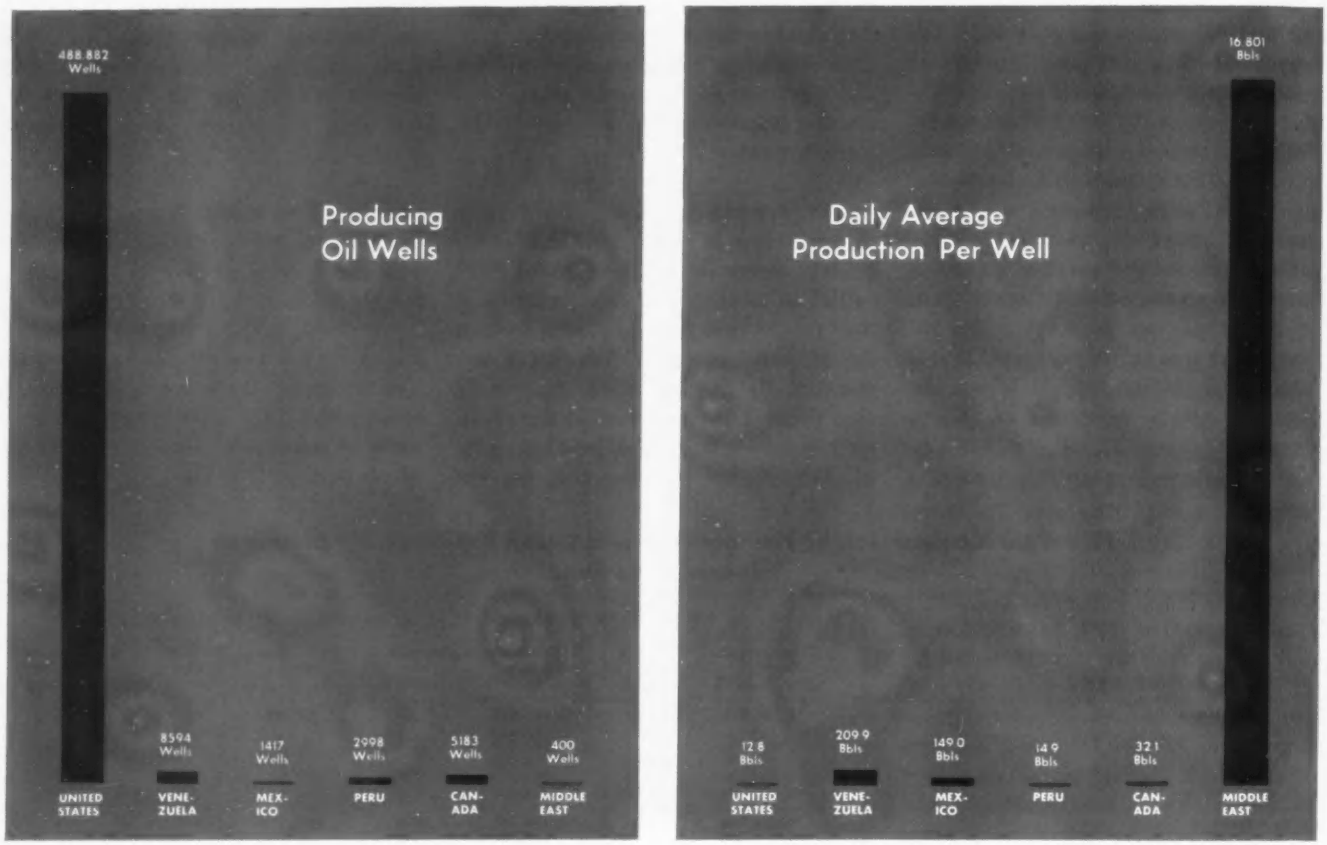
(Thousands of Barrels)

CONTINENT and COUNTRY	ESTIMATED RESERVES				ANNUAL PRODUCTION		Ratio of Reserves to Annual Prod. (Years' Supply)
	Thousand Barrels Jan. 1, 1948	Percent of World	Thousand Barrels Jan. 1, 1953	Percent of World	Thousand Barrels in 1952	Percent of World	
North America	**22,748,700**	**36.88**	**32,168,100**	**28.09**	**2,430,405**	**53.82**	**13.2**
Alaska	.....	.....	500	.....	.....	.....	.....
Canada	200,000	0.32	2,000,000	1.74	61,240	1.35	32.7
Cuba	3,000	0.01	2,000	.....	100	.....	20.0
Mexico	1,058,000	1.71	2,200,000	1.92	77,068	1.71	28.5
*United States	21,487,700	34.84	27,965,600	24.43	2,291,997	50.76	12.2
South America	**9,651,400**	**15.65**	**10,756,600**	**9.39**	**765,801**	**16.95**	**14.2**
Argentina	275,000	0.45	300,000	0.26	24,668	0.54	12.2
Bolivia	50,000	0.08	10,000	0.01	529	0.01	18.9
Brazil	1,000	0.00	40,000	0.03	720	0.02	55.6
Chile	400	0.00	35,000	0.03	909	0.02	38.5
Colombia	500,000	0.81	475,000	0.42	38,983	0.86	12.2
Ecuador	25,000	0.04	23,000	0.02	2,904	0.07	7.9
Peru	150,000	0.24	170,000	0.15	16,403	0.36	10.4
Trinidad	300,000	0.49	250,000	0.21	20,462	0.45	12.2
Venezuela	8,350,000	13.54	9,453,600	8.26	660,223	14.62	14.5
Europe	**8,288,700**	**13.44**	**7,561,700**	**6.60**	**427,044**	**9.46**	**17.7**
Albania	25,000	0.04	20,000	0.02	2,800	0.07	7.1
Austria	70,000	0.11	200,000	0.17	20,000	0.44	10.0
Czechoslovakia	3,000	0.01	10,000	0.01	590	0.01	16.9
France	7,200	0.01	30,000	0.03	2,550	0.06	11.8
Germany	10,000	0.02	248,200	0.21	12,200	0.27	20.3
Great Britain	80,000	0.13	5,000	0.01	388	0.01	12.9
Hungary	72,000	0.12	40,000	0.03	5,000	0.11	8.0
Italy	1,000	0.00	3,500	.....	75	.....	46.6
Netherlands	25,000	0.04	75,000	0.07	4,972	0.11	15.1
Poland	20,000	0.03	20,000	0.02	1,962	0.04	10.2
Roumania	475,000	0.77	400,000	0.35	32,000	0.71	12.5
U.S.S.R.	7,500,000	12.16	6,500,000	5.67	342,776	7.59	19.0
Yugoslavia	500	0.00	10,000	0.01	1,731	0.04	5.8
Africa	**141,500**	**0.23**	**214,000**	**0.19**	**17,345**	**0.39**	**12.3**
Algeria	100	0.00	4,000	0.01	262	0.01	15.3
Egypt	141,000	0.23	200,000	0.17	16,373	0.36	12.2
Morocco	400	0.00	10,000	0.01	710	0.02	14.1
Asia, Total	**20,852,550**	**33.80**	**63,815,500**	**55.72**	**875,127**	**19.37**	**72.9**
Asia, Middle East	**19,505,000**	**31.62**	**61,625,000**	**53.81**	**769,106**	**16.83**	**80.1**
Bahrain	280,000	0.45	300,000	0.26	11,004	0.24	27.3
Iran	5,625,000	9.12	13,000,000	11.34	7,777	0.17	1,671.6
Iraq	5,000,000	8.11	11,000,000	9.61	140,663	3.12	78.2
Kuwait	4,500,000	7.30	18,000,000	15.72	273,439	6.05	65.8
Qatar	500,000	0.81	1,250,000	1.09	25,249	0.56	49.5
Saudi Arabia	3,600,000	5.83	18,000,000	15.72	301,861	6.69	59.6
Turkey	.....	.....	75,000	0.07	113	.....	663.7
Asia, Far East	**1,347,550**	**2.18**	**2,190,500**	**1.91**	**115,021**	**2.54**	19.0
Borneo, British (Sarawak and Brunei)	200,000	0.32	550,000	0.48	38,251	0.84	14.4
Burma	125,000	0.20	45,000	0.04	1,000	0.03	45.0
China	15,000	0.02	15,000	0.02	732	0.02	20.5
Formosa	50	0.00	500	.....	15	.....	33.3
India	35,000	0.06	28,000	0.02	1,990	0.04	14.1
Indonesia	.....	.....	1,400,000	1.22	62,514	1.38	22.4
Japan	32,500	0.05	30,000	0.03	2,134	0.05	14.1
Pakistan	.....	.....	22,000	0.02	1,385	0.03	15.9
Sakhalin	90,000	0.15	100,000	0.08	7,000	0.15	14.3
Netherlands Indies	850,000	1.38	.....	.....	n.a.	.....	.....
Australia-New Zealand	**50**	**0.00**	**100**	**0.01**	8	**0.01**	**12.5**
World, Undistributed	**150**	**0.00**	.....	.....	.....	.....	.....
TOTAL WORLD	***61,683,035**[r]	**100.00**	***114,516,000**	**100.00**	**4,515,730**	**100.00**	**25.4**

* U.S. crude oil only; not including natural gas liquids.

[r] Reserves shown for Middle East countries include only proved reserves; data are exclusive of indicated but not proved reserves (indicated by fields discovered but not yet fully explored); those excluded indicated reserves are estimated as follows; Iran 1 billion barrels, Iraq 1 billion, Kuwait 4½ to 5½ billion, Qatar ½ billion, Saudi Arabia 2 to 2½ billion, total Middle East 9 to 10½ billion barrels.

Producing Oil Wells and Daily Output of Principal Areas, End of 1952



*IRAQ NOT INCLUDED IN MIDDLE EAST FIGURES

World Producing Wells . . . total 521,449 at close of 1952

. . . approximately 11,840 more than at the end of 1951.

At the close of the year, world producing oil wells numbered approximately 521,449, or about 11,840 more at the close of 1951. This increase in crude producers resulted in the world's daily average output of 12,337,812 barrels, an increase of 297,528 barrels from the previous year.

Compilation of details such as the exact number of producing wells necessarily is a difficult task granting complete cooperation by all governments, but impossible in the world today. Political factors which allow and foster dictator countries and which draw within their shadows satellite peoples preclude any exact figure on producing wells. But wherever possible, World Oil has used information from its private sources within those areas to arrive at carefully gauged estimates.

United States. The U. S., as the world's No. 1 producing area, reflected a gain of 9787 producing oil wells from 479,095 in 1951 to 488,882 at the end of 1952, but daily average production last year dropped 227,458 barrels—from 6,489,652 barrels in 1951 to 6,262,194 barrels at the end of 1952, or 3.5 percent.

Canada. Canada's continuing boom was reflected in its 1952 producing activities, when both total producing wells and daily average production climbed almost 30 percent from the previous year. The country's 5183 producing wells at the end of 1952 reflected a 29.3 percent rise from the close of the previous year when the total reached 4007. Daily average production surged upward 29.1 percent—37,590 barrels—from the previous year's daily average yield of 129,074 barrels.

Mexico. Mexico's producing wells climbed to 1417 at year's end from 1270 the previous year and daily average production dropped to 211,101 barrels from 211,203 barrels in 1951.

Venezuela. Venezuela again easily led all other South American countries with 8594 producing wells and daily average production of 1,803,886 barrels, 8.8 percent and 5.8 percent, respectively, greater than at the end of the previous year.

Europe. Europe's daily average production at year's end climbed from 976,252 barrels in 1951 to 1,166,774 barrels in 1952, a gain of 190,522 barrels. This figure includes all oil producing countries of Europe, including USSR and its satellites. World Oil's private sources from behind the Iron Curtain were able to furnish detailed

statistics on production, even though they could not obtain in all cases the exact number of crude producers.

Africa. Algeria, Egypt and Morocco combined to hike their total daily average production 927 barrels from 1951's December figure of 46,464 barrels. At the end of 1951, 252 wells were producing oil; last year, Algeria showed 57 and Morocco 94. Figures were not available on total Egyptian producers at year's end.

Middle East. As in 1951, Saudi Arabia and Kuwait ranked No. 1 and No. 2, respectively, in daily average production at the close of the year. Saudi Arabia accounted for an 8.3 percent gain—from 761,540 barrels in December, 1951, to 824,756 barrels in the same period last year. Kuwait chalked up a 32.9 percent rise—from 561,992 barrels in 1951 to 747,100 barrels in 1952. Kuwait's 140 wells producing at year's end amounted to an 18.6 percent increase in producing producers, and Saudi Arabia's 132 equalled a 11.9 percent upsurge. Each country had 118 oil producers at the close of 1951.

Far East. Indonesia's 170,804 barrel daily average production last year, up 19,152 barrels from the previous year, marked it as the Far East's major producer.

Producing Oil Wells and Daily Production, 1951 and 1952, by Countries

COUNTRY	Total Producing Oil Wells End of 1951	Daily Average Production End of 1951	PRODUCING OIL WELLS AND THEIR OUTPUT AT END OF 1952		
			Total Producing	Daily Average Production	Barrels Daily Per Well
NORTH AMERICA, Except United States:					
Canada	4,007	129,074	5,183	166,664	32.1
Mexico	1,270	211,203	1,417	211,101	149.0
Total North America, Outside United States	5,277	340,277	6,600	377,765	57.2
WEST INDIES:					
Cuba	n.a.	323	n.a.	273	.....
Trinidad	2,151	56,252	2,463	55,906	22.7
Total West Indies	.....	56,575	.....	56,179	.....
SOUTH AMERICA:					
Argentine	n.a.	66,868	[1]445	67,399	.....
Bolivia	3	1,408	n.a.	1,445	.....
Brazil	n.a.	2,072	n.a.	1,967	.....
Chile	10	2,079	13	2,485	191.2
Colombia	1,450	104,516	1,257	106,509	84.7
Ecuador	1,026	7,438	1,143	7,935	6.9
Peru	3,264	44,134	2,998	44,818	14.9
Venezuela	7,902	1,704,622	8,594	1,803,886	209.9
Total South America	.....	1,933,137	.....	2,036,444	.....
EUROPE:					
Albania	n.a.	6,578	n.a.	7,651	.....
Austria	n.a.	41,123	n.a.	54,644	.....
Czechoslovakia	n.a.	959	n.a.	1,611	.....
France	585	5,800	602	6,967	11.5
Germany	2,147	26,208	2,317	33,332	14.4
Great Britain	231	918	229	1,061	4.6
Hungary	n.a.	12,329	n.a.	13,661	.....
Italy	n.a.	373	n.a.	205	.....
Netherlands	143	13,600	180	13,585	75.4
Poland	n.a.	3,556	n.a.	5,362	.....
Roumania	n.a.	73,973	n.a.	87,430	.....
U.S.S.R.	n.a.	787,671	n.a.	943,533	.....
Yugoslavia	n.a.	3,164	n.a.	4,732	.....
Total Europe	.....	976,252	.....	1,166,774	.....
AFRICA:					
Algeria	40	277	57	716	12.6
Egypt	145	44,655	n.a.	44,736	.....
Morocco	67	1,532	94	1,939	20.6
Total Africa	252	46,464	.....	47,391	.....
MIDDLE EAST:					
Bahrain Island	72	30,121	79	30,000	379.7
Iran	87	352,063	18	21,248	1,180.4
Iraq	74	168,586	n.a.	384,326	.....
Kuwait	118	561,992	140	747,100	5,336.4
Qatar	21	49,581	19	68,986	3,630.8
Saudi Arabia	118	761,540	132	824,756	6,248.2
Turkey	4	266	12	309	25.8
Total Middle East	494	1,924,149	.....	2,076,725	.....
FAR EAST:					
British Borneo (Sarawak and Brunei)	301	102,652	321	104,511	325.6
Burma	n.a.	1,764	n.a.	2,732	.....
China and Formosa	n.a.	2,061	n.a.	2,041	.....
India and Pakistan	n.a.	9,328	n.a.	9,223	.....
Japan	3,507	6,318	3,000	5,829	1.9
Indonesia	1,771	151,652	1,854	170,804	92.1
Sakhalin	n.a.	n.a.	n.a.	19,178	n.a.
Total Far East	.....	273,775	.....	314,318	.....
OCEANIA:					
Australia-New Zealand	n.a.	3	n.a.	22	.....
Total Oceania	.....	3	n.a.	22	.....
Total Outside United States	.....	5,550,632	.....	6,075,618	.....
UNITED STATES	479,095	6,489,652	488,882	6,262,194	12.8
TOTAL WORLD	.....	12,040,284	.....	12,337,812	.....

n.a.—Not available. [1] Diadema Argentina de Petroleo only.

• World Refining Capacity and Operations

(BARRELS)

CONTINENT and COUNTRY	Number of Plants	Daily Crude Charging Capacity	DAILY CRUDE* RUNS TO STILLS 1952	DAILY CRUDE* RUNS TO STILLS 1951	Percent Diff.
NORTH AMERICA:					
Canada	53	575,350	410,774	343,324	+ 20.0
Cuba	5	6,080	8,000	8,355	.....
Mexico	25	335,660	168,065	154,516	+ 8.8
United States	346	7,233,625	6,951,741	6,646,194	+ 4.6
Total North America	**429**	**8,150,715**	**7,538,580**	**7,152,389**	**+ 5.4**
SOUTH AMERICA:					
Argentina	24	241,410	140,645	135,161	+ 4.1
Bolivia	4	10,391	1,290	1,226	+ 5.2
Brazil	8	105,000	5,452	2,903	+ 86.7
Chile	10	33,470	.....	.....	.....
Colombia	6	42,500	31,774	24,097	+ 31.9
Ecuador	2	11,800	4,935	4,806	+ 2.7
Netherlands West Indies	3	677,000	875,097	903,871	— 3.2
Peru	4	32,300	35,387	38,742	— 8.7
Trinidad	6	123,300	100,226	89,290	+ 12.2
Uruguay	1	25,000	19,355	16,323	+ 18.6
Venezuela	14	401,370	390,742	351,000	+ 11.3
Total South America	**82**	**1,703,541**	**1,604,903**	**1,567,419**	**+ 2.4**
WESTERN EUROPE:					
Austria	8	110,700	20,000†	17,520†	+ 14.2
Belgium	3	37,300	58,419	52,710	+ 10.8
Denmark	3	620	32	387	— 91.7
France	14	448,250	474,226	419,032	+ 13.2
Germany	42	227,740	108,290	94,839	+ 14.2
Italy and Trieste	28	205,600	224,387	171,355	— 30.9
Netherlands	2	193,000	148,000	129,097	+ 14.6
Norway	1	1,000	1,484	1,032	+ 43.8
Portugal	1	4,600	9,677	8,065	+ 20.0
Spain	1	25,000	28,871	9,387	+207.6
Sweden	4	24,800	22,581	20,968	+ 7.7
Switzerland	2	n.a.	1,100†	1,100†	.....
United Kingdom	16	539,200	472,484	436,612	+ 8.2
Total Western Europe	**125**	**1,817,810**	**1,569,551**	**1,362,104**	**+ 15.2**
EASTERN EUROPE:					
U.S.S.R.	27	1,079,970	893,548	804,000	+ 11.1
Other Eastern Europe	59	215,000	145,161	146,161	— 0.7
Total Eastern Europe:	**86**	**1,294,970**	**1,038,709**	**950,161**	**+ 9.3**
Total Europe	**211**	**3,112,780**	**2,608,260**	**2,312,265**	**+ 12.8**
MIDDLE EAST:					
Bahrain Island	1	155,000	187,806	209,871	— 10.5
Iraq	5	19,230	16,774	9,677	+ 73.3
Iran	2	552,300	24,839	38,710	— 35.8
Kuwait	1	27,500	27,161	26,323	+ 3.2
Lebanon	1	11,000	11,774	11,258	+ 4.6
Saudi Arabia	2	374,000	154,419	151,290	+ 2.1
Turkey	1	500	129	n.a.	.....
Israel	1	80,000	20,968	10,968	+ 91.2
Total Middle East	**14**	**1,219,530**	**443,870**	**458,097**	**— 3.1**
FAR EAST:					
China	1	17,000	1,935	2,258	— 14.3
India-Burma-Pakistan	3	13,100	11,290	10,323	+ 9.4
Japan	19	79,600	102,806	75,774	+ 35.7
Netherlands East Indies, British Borneo-Indonesia	6	232,600	249,000	227,226	+ 9.6
Total Far East	**29**	**343,300**	**368,612**	**315,581**	**+ 16.8**
AFRICA:					
Canary Islands	1	16,000	25,129	16,613	+ 51.3
Egypt	2	47,000	52,484	47,613	+ 10.2
French Morocco	1	2,500	2,323	2,032	.....
Total Africa	**4**	**65,500**	**79,936**	**66,258**	**+ 20.6**
OCEANIA:					
Australia	4	17,500	18,581	17,710	+ 4.9
TOTAL WORLD	**773**	**14,612,866**	**12,662,742**	**11,889,719**	**+ 6.5**

* Data from Bureau of Mines "World Petroleum Statistics" for December, 1951 and 1952.
† Data from Organization for European Economic Co-operation.

World Refining . . . Daily runs to 773 refineries up 6.5 percent to 12,662,742 barrels.

DAILY CRUDE RUNS to stills of the world's 773 operating refineries in 1952 totaled 12,662,742 barrels at the close of the year, an increase of 6.5 percent—773,023 barrels—over 1951.

The U.S. retained its position as the world's largest petroleum refining nation with 346 refineries in operation during the past year which had a combined daily crude charging capacity of 7,233,625 barrels. U.S. daily crude runs to stills amounted to 6,951,741 barrels at year's end, up 305,547 barrels from the previous year. This upsurge in refining was tantamount to a 4.6 percent rise.

Canada's continuing oil boom was reflected in the refining industry, too. In number of refineries the nation climbed from 45 in 1951 to 53 last year. Paralleling that upturn were the resulting increases in daily crude charging capacity and daily crude runs to stills at the close of the year. Refinery capacity rose 113,000 barrels daily from 462,350 in 1951; daily crude charging runs to stills climbed 20 percent from the previous year to a total of 410,774 barrels. Cuba's five refineries accounted for a 355-barrel-per-day increase, and Mexico's 25 refineries handled 13,549 barrels daily more than at the same period during the previous year—a jump of 8.8 percent.

Thus, North America, with almost 56 percent of the world's total refineries, and approximately the same share of total daily crude charging capacity, reported daily crude runs to stills last year of 7,538,580—5.4 percent more than the previous year.

As in 1951, every refining region except the Middle East rolled up increases in refining operations. That area slipped 3.1 percent in daily crude runs to stills, equal to a decline of 14,227 barrels per day. So, with a daily crude charging capacity of 1,219,530 barrels, Middle East's 14 refineries reported daily runs of 443,870 barrels at the close of 1952.

Major among the reasons for the Middle Eastern refining position was the continued immobilization during 1952 of the immense Abadan refinery, resulting from Iran's ousting of Anglo-Iranian Oil Company. Bahrain Island's single refinery recorded a 10.5 percent drop in daily crude runs at the close of 1952—from 209,871 barrels in the previous year to 187,806 barrels.

Volume-wise, Saudi Arabia was the No. 2 Middle East refining country. There, two refineries, with combined throughput capacity of 374,000 barrels daily, handled total daily crude runs to stills of 154,419 barrels at the year's end—up 4.0 percent from the previous year. Bahrain Island, despite its decrease in daily runs, remained in top position. Percentagewise, Israel, with one refinery, led the region in increases—with 91.2 percent upswing resulting from daily runs of 20,968 barrels.

Iraq chalked up a 73.3 percent hike in reporting daily crude runs to stills of 16,774 barrels at the close of the year. At the close of 1951, its five refineries handled daily runs of 9677 barrels.

SPANG CABLE TOOLS and SPANG PACKERS aid modern drilling in All Fields

Spang Cable Tools and Spang Packers have been developed in the belief that the best equipment and the best maintenance result in the most economical drilling. Spang Tools, built for rugged service, are known and preferred the world over. They are available through leading supply companies and field shops everywhere.

Your Favorite Supply Dealer
recommends and sells
SPANG CABLE TOOLS

D312—Swivel Rope Socket
D322—Weldless Jar
D328—Drilling Stem
D330—Stem Pin
D335—Stem Box
D360—Straight Drilling Bit
D368—Twisted Drilling Bit
D380—Regular Bailer
F460—Center Rope Spear
F467—Three Prong Grab
F476—Solid Board Friction Socket
F481—Multi-Slip Collar Socket
F482—Full-Circle 3-Slip Slip Socket
F515—Reversible Casing Ripper
P124—Deep-Hole Special Bottom-Hole Packer
P131—Screw-Release Casing-Anchor Packer

THE HIGHER STANDARD

SPANG & CO.
BUTLER, PA.

The Higher Standard

Conversion Factors

COUNTRY	BARRELS PER TON			TONS PER BARREL	
	Long Tons	Metric Tons	Short Tons	Long Tons	Metric Tons
North America:					
Canada	7.891	7.766	7.046	.12673	.12877
Mexico	7.281	7.166	6.501	.13734	.13955
United States	7.459	7.341	6.660	.13406	.13621
South America:					
Argentina	7.134	7.021	6.370	.14017	.14242
Bolivia	7.841	7.717	7.001	.12754	.12959
Colombia	7.143	7.030	6.378	.13999	.14224
Ecuador	7.707	7.585	6.881	.12975	.13183
Peru	7.661	7.540	6.840	.13054	.13264
Trinidad	7.193	7.079	6.422	.13903	.14126
Venezuela	6.958	6.848	6.212	.14372	.14603
Europe:					
Albania	6.706	6.600	5.988	.14912	.15151
Austria	6.897	6.788	6.158	.14500	.14733
Czechoslovakia	6.891	6.782	6.153	.14513	.14746
England	7.440	7.322	6.643	.13440	.13656
France	7.177	7.064	6.408	.13933	.14157
Germany	7.129	7.017	6.365	.14027	.14252
Hungary	7.754	7.631	6.923	.12896	.13103
Italy	7.800	7.677	6.964	.12821	.13027
Poland	7.526	7.407	6.720	.13288	.13501
Roumania	7.525	7.406	6.719	.13288	.13501
U.S.S.R. (Except Sakhalin)	7.390	7.273	6.598	.13532	.13749
Africa:					
Egypt	7.116	7.003	6.354	.14053	.14279

COUNTRY	BARRELS PER TON			TONS PER BARREL	
	Long Tons	Metric Tons	Short Tons	Long Tons	Metric Tons
Asia (Middle East):					
Bahrain	7.446	7.328	6.648	.13431	.13647
Iran (Persia)	7.669	7.548	6.847	.13039	.13248
Iraq	7.600	7.480	6.786	.13159	.13370
Kuwait	7.482	7.364	6.680	.13365	.13580
Saudi Arabia	7.537	7.418	6.729	.13267	.13480
Asia (Far East):					
Borneo	7.345	7.229	6.558	.13614	.13833
India	7.355	7.239	6.567	.13596	.13814
Japan	7.143	7.030	6.378	.13999	.14224
Netherlands Indies	7.911	7.786	7.063	.12641	.12844
Sakhalin (U.S.S.R.)	6.930	6.820	6.188	.14430	.14662
Sarawak	6.762	6.655	6.038	.14788	.15025

API Gravity Conversion Factors

GRAVITY	BARRELS PER TON			TONS PER BARREL	
	Long Tons	Metric Tons	Short Tons	Long Tons	Metric Tons
28° Crude Oil	7.220	7.106	6.446	.1385	.1407
32° Crude Oil	7.401	7.284	6.608	.1351	.1373
36° Crude Oil	7.582	7.462	6.770	.1319	.1340
40° Crude Oil	7.763	7.641	6.931	.1288	.1309
44° Crude Oil	7.945	7.819	7.094	.1259	.1279

Conversion Factors for Lengths, Areas, Weight and Volumes

Acres multiplied by:
43560 = square feet
4840 = square yards
4046.873 = square meters
0.00156 = square miles
0.00405 = square kilometers
0.4047 = hectares
5645.4 = square varas (Texas)
40.47 = ares

Atmospheres (at mean sea level) multiplied by:
14.70 = pounds per square inch
76 = centimeters of mercury
29.92 = inches of mercury

Barrels (U.S.) multiplied by:
9702 = cubic inches
5.6146 = cubic feet
0.15898 = cubic meters
34.9726 = Imperial gallons
42 = U.S. gallons
158.984 = liters
0.1588 = metric tons (water 60° F.)
= tons of crude oil (see crude oil conversion factors table)

Centare multiplied by:
1 = square meters

Centimeters, Linear multiplied by:
0.3937 = inches
0.0328 = feet
0.01094 = yards
0.01 = meters
10 = millimeters

Centimeters, Cubic multiplied by:
0.0610 = cubic inches
0.0353 = cubic feet
0.0000013 = cubic yards
0.000001 = cubic meters
0.001 = decimeters

Centimeters, Square multiplied by:
0.1549 = square inches
0.0001 = square meters
100 = square millimeters

Feet, Linear multiplied by:
12 = inches
0.3333 = yards
30.48 = centimeters
0.3048 = meters
0.0003 = kilometers
0.3600 = varas (Texas)

Feet, Cubic multiplied by:
1728 = cubic inches
0.03704 = cubic yards
28,317.016 = cubic centimeters
28.3170 = cubic decimeters

Feet, Cubic, continued
28.317 = liters
0.02832 = cubic meters
7.4805 = U.S. gallons
6.2288 = Imperial gallons
0.17811 = U.S. barrels

Feet, Square, multiplied by:
144 = square inches
0.1111 = square yards
0.0929 = square meters
929.03 = square centimeters

Gallon, U.S. multiplied by:
128 = ounces
4 = quarts
8 = pints
0.8327 = Imperial gallons
0.0238 = U.S. barrels
231 = cubic inches
0.1337 = cubic feet
3785.332 = milliliters
3.78553 = liters
3785.43 = cubic centimeters
0.003785 = cubic meters

Gallons, Imperial multiplied by:
277.42 = cubic inches
0.16054 = cubic feet
4.54596 = liters
0.0045461 = cubic meters
1.2010 = U.S. gallons
0.028594 = U.S. barrels

Hectares multiplied by:
2.471 = acres
0.00386 = square miles
10,000 = square meters

Inches, Linear multiplied by:
0.0833 = feet
0.02777 = yards
0.0254 = meters
2.54 = centimeters
25.4 = millimeters

Inches, Cubic multiplied by:
0.000578 = cubic feet
0.000021 = cubic yards
16.3871 = cubic centimeters
0.016387 = cubic decimeters
0.0163865 = cubic liters
0.0000163 = cubic meters
0.0036 = Imperial gallons
0.00433 = U.S. gallons
0.5541 = ounces
0.0173 = quarts

Inches, Square multiplied by:
0.0069 = square feet
0.00078 = square yards
6.4516 = square centimeters
0.0006 = square meters

Kilograms multiplied by:
2.20462 = pounds
.0011023 = short tons

Kilograms Per Square Centimeter multiplied by:
14.233 = pounds per square inch

Kilograms Per Square Meter multiplied by:
0.2048 = pounds per square foot
0.001422 = pounds per square inch
0.0000968 = atmosphere

Kiloliters multiplied by:
35.31 = cubic feet
264.14 = U.S. gallons
1000 = liters

Kilometers multiplied by:
3280.83 = feet
1093.6 = yards
0.6214 = mile
1000 = meters
10,000 = centimeters

Kilometers, Square multiplied by:
247.1 = acres
0.3861 = square miles

Liters multiplied by:
33.8147 = fluid ounces
1.0567 = quarts
0.2642 = U.S. gallons
0.2200 = Imperial gallons
0.00629 = U.S. barrels (oil)
2.202 = pounds (water 60° F.)
61.0251 = cubic inches
0.0353 = cubic feet
1000.03 = cubic centimeters
0.0013 = cubic yards
0.001 = cubic meters

Mercury (Inches) multiplied by:
0.3342 = atmospheres (mean sea level)
0.4912 = pounds per square inch
345.3 = kilograms per square inch

Meters, Linear multiplied by:
39.3701 = inches
3.28084 = feet
1.09361 = yards
0.0006 = miles
100 = centimeters
0.001 = kilometers
1000 = millimeters

Meters (Cubic) multiplied by:
61,023.38 = cubic inches
35.31445 = cubic feet
1.30796 = cubic yards

Meters (Cubic), continued
1,000,000 = cubic centimeters
999.97 = liters
264.17 = U.S. gallons
219.97 = Imperial gallons
6.2898 = U.S. barrels (oil)

Meters, Square multiplied by:
1550 = square inches
10.764 = square feet
1.1959 = square yards
10,000 = square centimeters
0.0001 = hectares
0.0002471 = acres
1 = centare

Miles multiplied by:
5280 = feet
1760 = yards
1609.3472 = meters
1.6093 = kilometers
1900.8 = varas (Texas)
0.8684 = nautical miles

Miles, Square multiplied by:
3,097,600 = square yards
2,589,998 = square meters
258.9998 = hectares
2.5900 = square kilometers
640 = acres

Milliliters multiplied by
0.0338 = fluid ounces
0.00026 = gallons
0.001 = liters
0.0610 = cubic inches

Millimeters multiplied by:
0.03937 = inches
0.001 = meters

Ounces (Fluid) multiplied by:
0.0078 = gallons
1.8047 = cubic inches
0.0295 = liters
29.5729 = milliliters
28.35 = grams
16 = pounds

Poods multiplied by:
36.113 = pounds

Pounds multiplied by:
16 = ounces
0.0005 = short tons
0.4536 = kilograms
0.0277 = poods

Pounds Per Square Inch multiplied by:
0.06804 = atmospneres

Pounds Per Square Inch, continued
703.066 = kilograms per square meter
2.036 = inches of mercury

Tons (Long) multiplied by:
2240 = pounds
1.01605 = metric tons
1.120 = short tons
1016 = kilograms

Tons (Metric) multiplied by:
0.9842 = long tons
2204.6223 = pounds
1.1023 = short tons
1000 = kilograms
6.297 = U.S. barrels (water 60° F.

Tons (Short) multiplied by:
2000 = pounds
0.8929 = long tons
0.9072 = metric tons
907.2 = kilograms

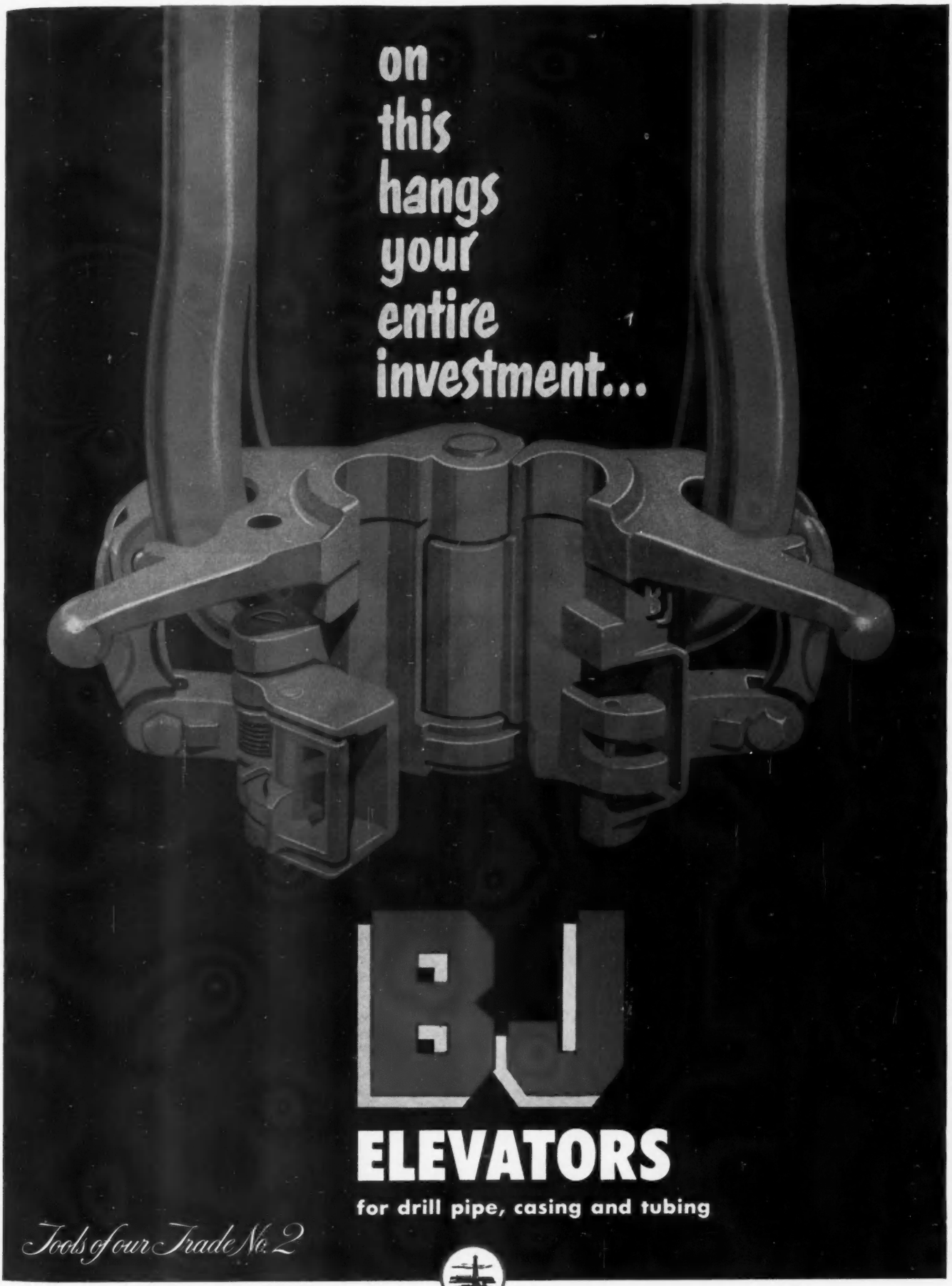
Varas multiplied by:
2.7408 = feet (in Mexico)
2.7425 = feet (in Chile, Peru, Spain)
2.8408 = feet (in Argentina)
3.6083 = feet (in Portugal)
2.775 = feet (in Texas)
0.838 = meters (in Mexico)
0.8359 = meters (in Chile, Peru, Spain)
0.866 = meters (in Argentina
0.8467 = meters (in Texas)
1.1 = meters (in Portugal)

Varas (Square) multiplied by:
0.0001774 = acres

Yards, (Linear) multiplied by:
36 = inches
3 = feet
0.9144 = meters
91.4402 = centimeters
0.1200 = varas

Yards (Cubic) multiplied by:
46.656 = cubic inches
27 = cubic feet
764,559.4 = cubic centimeters
764.6 = liters
0.76455 = cubic meters

Yards (Square) multiplied by:
1296 = square inches
9 = square feet
8361.307 = square centimeters
0.8361 = square meters



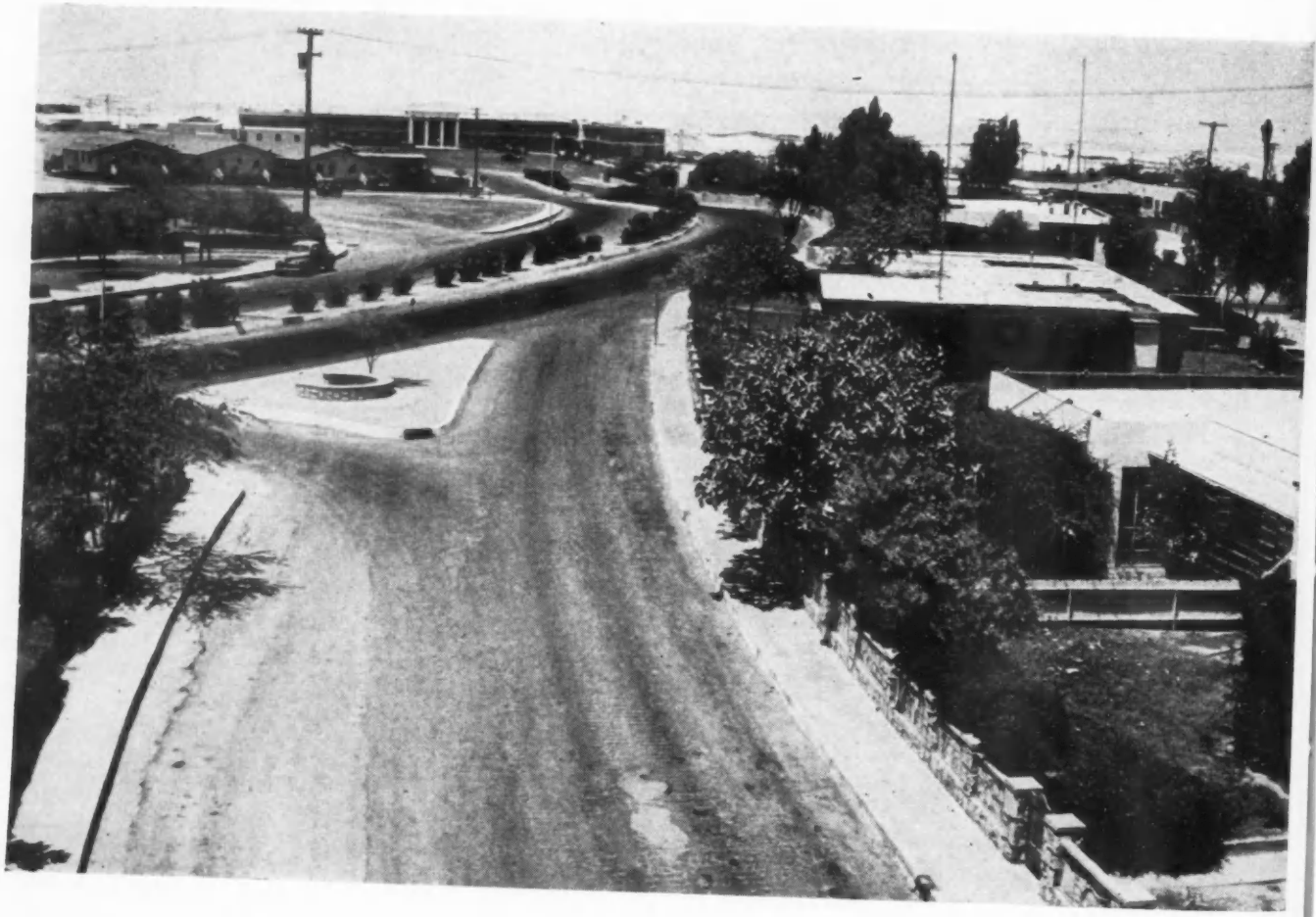
BJ MEANS ENGINEERED OIL TOOLS

BJ PB

Byron Jackson Co. Since 1872

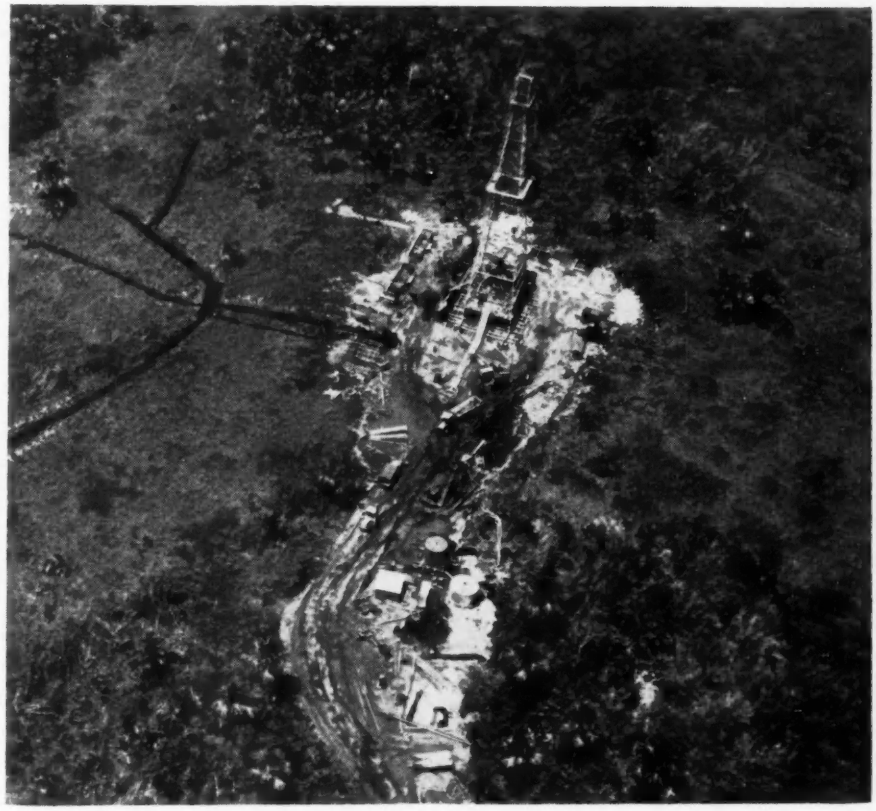
LOS ANGELES NEW YORK FORT WORTH HOUSTON

Then This is the Dhahran headquarters of the Arabian American Oil Company in Saudi Arabia as it appeared in 1936 . . .



Now And this is the way it appears today . . . looking up King's Road toward the company's air-conditioned administration building.

Arabian American Oil Co. Photos.



Creole Petroleum Corp. Photo

ISOLATED LOCATION in Eastern Venezuela. Creole Petroleum Corporation's Guanoco 2.

Private Capital on Road to Getting 'Fair Shake' Abroad

Legal climate surrounding oil activities' maze of restrictions; but foreign appreciation of the need for incentives is growing.

By GORDON H. BARROWS, Foreign Business Consultants, Washington, D. C.

AMONG the most important developments affecting exploration and development by American companies abroad has been the growth of foreign legislative restrictions and governmental intervention. In the growth of such restrictions and intervention, there are definite trends of importance to petroleum management interested in operations outside the U. S.

One of these trends is the formation of governmental petroleum agencies—a permanent and growing feature abroad. In addition, legislative restrictions are establishing growing single obligations such as unitization requirements in France, Britain or New Zealand; minimum production levels; obligations to meet domestic consumption requirements from production—often at preferential government price levels as in Mozambique—and increased personnel and refining commitments.

Along with restrictive measures goes an encouraging trend toward the healthy realization that fiscal incentives must be given the explorer and/or developer, together with a satisfactory political climate. In this trend is involved a greater appreciation abroad of the part that such incentives have played in areas of major petroleum development. Incentives similar to those in the U. S. are being incorporated, although sometimes on a reduced scale, in country legislation as in Peru, Colombia or France. And guarantees are sometimes given against future tax increases as in Tunisia, or against retroactive changes, as in Israel.

The royalty system, which is coming into increasing use, is tending to be modified by operating factors such as productivity, depth, distance from principal markets or shipping points, and crude quality.

This article, a condensation of a forthcoming book by the author on foreign oil law, is concerned with developing in more detail these and similar trends in foreign exploration and development legislation and in governmental intervention—as well as introducing an over-all look at the legal climate surrounding operations outside the U. S.

FOREIGN LEGISLATION differs basically from U. S. petroleum law in that private property rights in the subsoil are almost never recognized. Mineral rights are considered either as unowned property (res nullius)—in which case concessions given become perpetual property, as in Spain—or as state property, handed down from the former feudal ruler.

Whether either case, or a mixture of the two as is generally used, is applied, the nations of the world not having complete governmental monopoly have found three main types of legal regimes for the administration of mineral rights:

- The separate petroleum law, as found in such countries as Venezuela, Peru or Britain.
- The combined contract governing exploration and exploitation, as found in the Middle East where no other adequate mineral legislation exists.
- The administration of petroleum

under the general mining code as in Italy, sometimes with special provisions for hydrocarbons, as in Holland or Egypt.

Which of the three regimes is applied is sometimes important, but the general trends which are common to all are of more concern.

Exploration: The exploration or prospection permit is the first appearance of the future concessionaire, and its granting is hedged around with growing restrictions. The restrictions may be aimed at nationals, as in the case of Venezuela where persons in the government or politics may not receive permits, but more generally they are aimed at increasing control over the foreign permittee. In most Anglo-Saxon countries, such as the British colonies or the U. S., permits are given only if reciprocal privileges are allowed in the permittee's country. Usually residence of the permittee within the country is required, and the company charter must conform to local laws. The obligatory offer of stock participation to the government or nationals is increasingly called for.

The dominant trend in exploration requirements is toward increased minimum investment, often accompanied by a guarantee fund and work requirements. The minimum investment is stated usually as a flat yearly fee, as for example US$150,000/year in the Gulf Oil Corporation-Mozambique contract of 1948, or may be stated as a required investment per acre.

Usually, either case is lower than actual investment and the minimum expenditure is preferable to work programs because it is more flexible. Work programs required are usually in the form of drilling obligations to be begun within a certain time, two years in the case of the 1950 Sicilian petroleum law, but both investment and work programs are increasingly subject to state supervision, pointing toward prior state authorization for every important operation. It is interesting to note that this direct work program is least developed in the countries where production is the highest, such as Venezuela.

Personnel obligations, covering such things as health and working conditions, insurance or safety regulations, are increasing steadily. Especially important are requirements for employment and training of national labor which were especially high in Latin America and have spread to the Middle East.

Permit durations are shortest in areas of known geological favorability, such as Venezuela, or in areas subject to the general mining law as in Italy; and longest in areas with largely unknown geology (see Table 1). In recent legislation of Colombia and Peru, duration of permits is varied within the country to encourage exploration of less favorable regions. Extensions or renewals of the permit are increasingly conditioned on performance of minimum work or investment requirements, as in New Zealand or Canada.

The area of permits (see Table 1) is at a maximum in countries with separate petroleum laws or contracts where the special character of the industry is better known and less subject to the influence of mining legislation. This is one of the examples where the form of legal regime affects operations. Permit area is increasingly subject to reductions, which range up to 50 percent, with extensions of the permit duration.

Fiscal requirements in exploration are usually an initial registration fee, plus surface taxes or rentals. Registration fees are not high, except in Middle East contracts. Examples of surfaces taxes (see Table 1) reflect the growing trend toward attempted state direction of company efforts, as in Peru where taxes are lower on the less accessible Montaña region, or in Arabia where surface taxes are higher on territories where oil has not been produced as an incentive to development. During extensions of the permit duration, surface taxes tend to be progressively higher.

With fiscal requirements goes an encouraging trend toward fiscal incentives to the explorer. General tax exemptions have been given recently, as in the 1950 Sicilian law and in Israel, and reduction of import duties is becoming common in Latin America and the Middle East. There is a growing appreciation abroad of the part fiscal incentives play in the development of U. S. petroleum and a trend toward inclusion of a modified form of these same incentives in foreign legislation.

Examples of the trend are the quite complete tax incentives contemplated in France at present and exemption of exploratory investments from the patrimony tax in recent Colombian legislation. In the Peruvian petroleum law of 1951, exploration expenses are deductible for tax purposes from gross exploitation profits. In Israel, fiscal incentives patterned after U. S. incentives are being written into new legislation and concessions.

Due to the high initial exploration investment, conversion of the permit to development concession must be guaranteed, and here is another example where the form of legal regime affects operating conditions. Countries using mining legislation as the

TABLE 1
Sample Exploration Permit Requirements

COUNTRY	Total Possible Permit Duration	Maximum Permit Area (Acres)	Maximum Annual Surface Tax (US$/Acre)	Conversion
Argentina	5 years	24,700	.028	Conditional
British Honduras	5 years	320,000	.001 to .0021	Discretionary
BWI (Bahamas)	5 years	128,000	.001 to .0021	Discretionary
British Guiana	No limit	128,000		Discretionary
Colombia	9 years	494,000	.40	Guaranteed
Costa Rica	6 years	Entire state		Guaranteed
Cuba	3 years	79,073	.06	Discretionary
Ecuador	8 years (Or)	123,500	.026	Guaranteed
Egypt	4 years	24,700		Guaranteed
El Salvador	Discretionary	Discretionary	Discretionary	Discretionary
England	5 years	128,000	.021	Conditional
France	5 years	No limit		Conditional
Germany	No limit	No limit		Discretionary
Guatemala	4 years	494,000	.008	Discretionary
Haiti	Unspecified	Entire state		Guaranteed
Honduras	Unspecified	Unspecified	.19	Unspecified
Italy	3 years	4,940		Conditional
Morocco (France)	23 years	3,952	.004	Discretionary
Nicaragua	6 years	74,131		Guaranteed
New Zealand	5 years, plus extensions	128,000	.021	Conditional
Panama	3 years	6,177	.04 to .06	Guaranteed
Papua (New Guinea)	6 years	1,600,000	.00017 to .0017	Discretionary
Peru:				
Coastal	5 years	49,400	.155	Guaranteed
Montaña	10 years	123,500	.037	Guaranteed
Sicily	9 years	247,000	.064	Guaranteed
Spain	6 years	No limit	.03	Discretionary
Trinidad	1 year, plus extensions	100,000	.05	Discretionary
Tunisia	26 years	988		Discretionary
Venezuela	3 years	24,700	.27	Guaranteed

Under the column labeled "Conversion" the word "discretionary" means discretionary with the government. "Conditional" means conditional upon performance, usually proof of development or accomplished investment work program. Exchange conversions at rate which would be used by operating company.

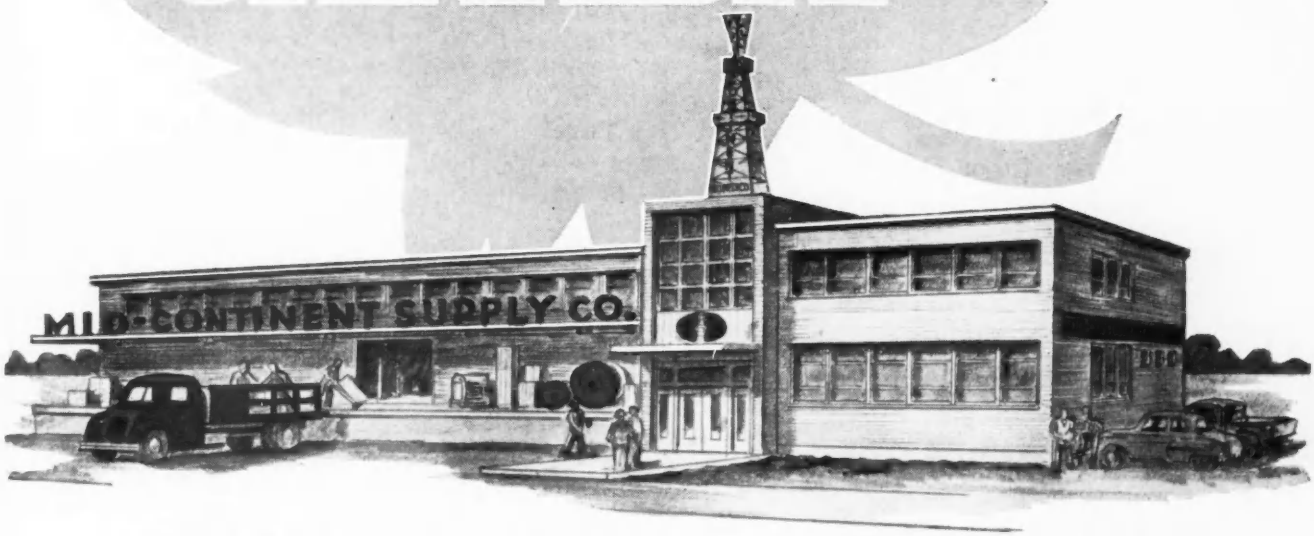
MID★CONTINENT

Locates

COMPLETELY STOCKED

SUPPLY STORE in

CANADA



EDMONTON, ALBERTA, STORE NOW BEING BUILT

From a new, modern supply store on South 104th Street, between 67th and 68th Avenues, Mid-Continent Supply Co. is now offering the Canadian oil industry the same well known name brand products and the same "Around the Clock" service that has made it famous the world over. It's the best oil field service obtainable—Try It Today!

SUPPLYING THE OIL INDUSTRY WORLD WIDE

DIVISION OFFICE • CALGARY, ALBERTA CANADA

MID-CONTINENT Supply Company

General Offices Mid-Continent Building FORT WORTH, TEXAS

THE WORLD'S LARGEST INDEPENDENT OIL FIELD SUPPLY COMPANY

basis of petroleum jurisdiction often do not recognize this absolute need, but in countries operating through the separate petroleum law or exploration-development contracts, conversion is generally guaranteed.

Development: In development concessions, the outstanding trend is toward the 50-50 profits split which originated in Venezuela. The split tends to be accomplished through an income tax and is predicated on equal contribution to earnings by country and company. Recent legislation indicates, however, that the split may be demanded without this equal contribution in the form of favorable geology by the country. In addition, more may be demanded, as in the graduated "super profits" tax of France, which runs progressively far above 50 percent, or in the use of an export tax levied after the profits split, as in Peru.

An interesting variation of the profit-sharing method is contained in the Gulf-Mozambique contract of 1948, which provides for admission of the state to one-third stock interest, state profits share to be taken out of stock dividends.

Fiscal incentives, as mentioned under exploration, show an encouraging trend toward recognition of their importance in the U. S. Depletion allowance is included in recent legislation in Colombia and Peru and is contemplated in France and Israel, although not as high as in the U. S. in all cases. Exemption of the concessionaire from import duties is becoming frequent, being widespread throughout the Middle East and Latin America, and occasionally protection is given against export duties, as received in Colombia. A strong fiscal incentive is the guarantee against future tax increases, as given in Tunisia, or against retroactivity, as in Israel.

The principal remaining fiscal obligations of the concessionaire are royalties or per-barrel payments, surface taxes and registration fees.

Royalties tend to be subject to operating factors, as in Argentina where they vary between 12 percent and 8 percent, depending on productivity, depth, distance from principal market, or crude quality. In Colombia royalties vary from 3 percent to 13 percent, depending upon distance of production site from the coast. Per-barrel payments and high annual fees are found usually in the Middle East; otherwise, registration fees are low, approximately US$112.00 in England, for example.

Surface taxes (see Table 2) are highest in areas of petroleum development. The trend is to use them to influence operations by decreasing taxes on less promising areas and increasing them on extensions of the concession duration.

The area and duration of concessions vary greatly (see Table 3), but the tendency is toward concessions of about 40 years' duration and a shorter extension. Different durations are given for different sections of the country in another attempt to direct operations. Except for states strongly conscious of private property rights, such as England, on expiration of the concession all essential producing equipment generally becomes the property of the state, or the state may have an option to purchase installations, as in Germany or British Guiana.

Voluntary termination of the concession is usually permitted only with previous authorization by the government and, in the event of such backaway, installations become the property of the state as above. Development areas often have no set maximum but tend to be defined as a certain fraction of the original exploration permit. Some states, such as French Morocco, limit the amount of concessions per concessionaire, but there is not a general tendency to prohibit the creation of subsidiaries to hold concessions.

Growing single obligations of the concessionaire call for unitization as in France, New Zealand, Britain and Israel. Work supervision by the government may fix security regulations,

TABLE 2
Exploitation Concessions
Sample Surface Taxes and Royalties

COUNTRY	Annual Surface Tax (US$/Acre)	Royalty
Argentina	0.28	12% to 8%
Bahamas Islands	0.14 to 0.84	12½%
British Honduras	0.17 to 1.05	12½%
Colombia	0.016 to 0.48	3% to 13%
Costa Rica		10% to 15%
Cuba	0.04 to 0.161	11%
Ecuador	0.0048 to 0.026	5% to 11%
El Salvador	Discretionary	Discretionary
England	0.14 to 0.84	US$ 0.056 to US$ 0.122 bbl.
France	None	None
Germany		5%
Guatemala	0.607 to 4.45	12½% to 27½%
Haiti	0.016 to 0.032	11%
Honduras	0.198	5%
Indonesia		12%
Italy	0.0032	Not specified
Middle East:		
Iran		US$ 0.22 to 0.23 per bbl.
Iraq		US$ 0.22 per bbl.
Kuwait		US$ 0.093 per bbl.
Neutral Zone		US$ 0.35 per bbl. (Am. Ind.)
		US$ 0.55 per bbl. (Pac. West.)
Qatar		US$ 0.85 per bbl.
Saudi Arabia		US$ 0.22 per bbl.
Nicaragua	0.008	7% to 10%
New Zealand	0.043	5%
Panama		16⅔%
Papua—New Guinea	0.017 to 0.051	10%
Peru:		
Coastal Zone	0.257 to 0.769	None
Montaña	0.064 to 0.255	None
Sicily	0.323	4% to 20%
Spain	0.06	5%
Trinidad	0.56 to 2.10	10% to 12½%
Venezuela	0.62 to 3.72	16⅔%

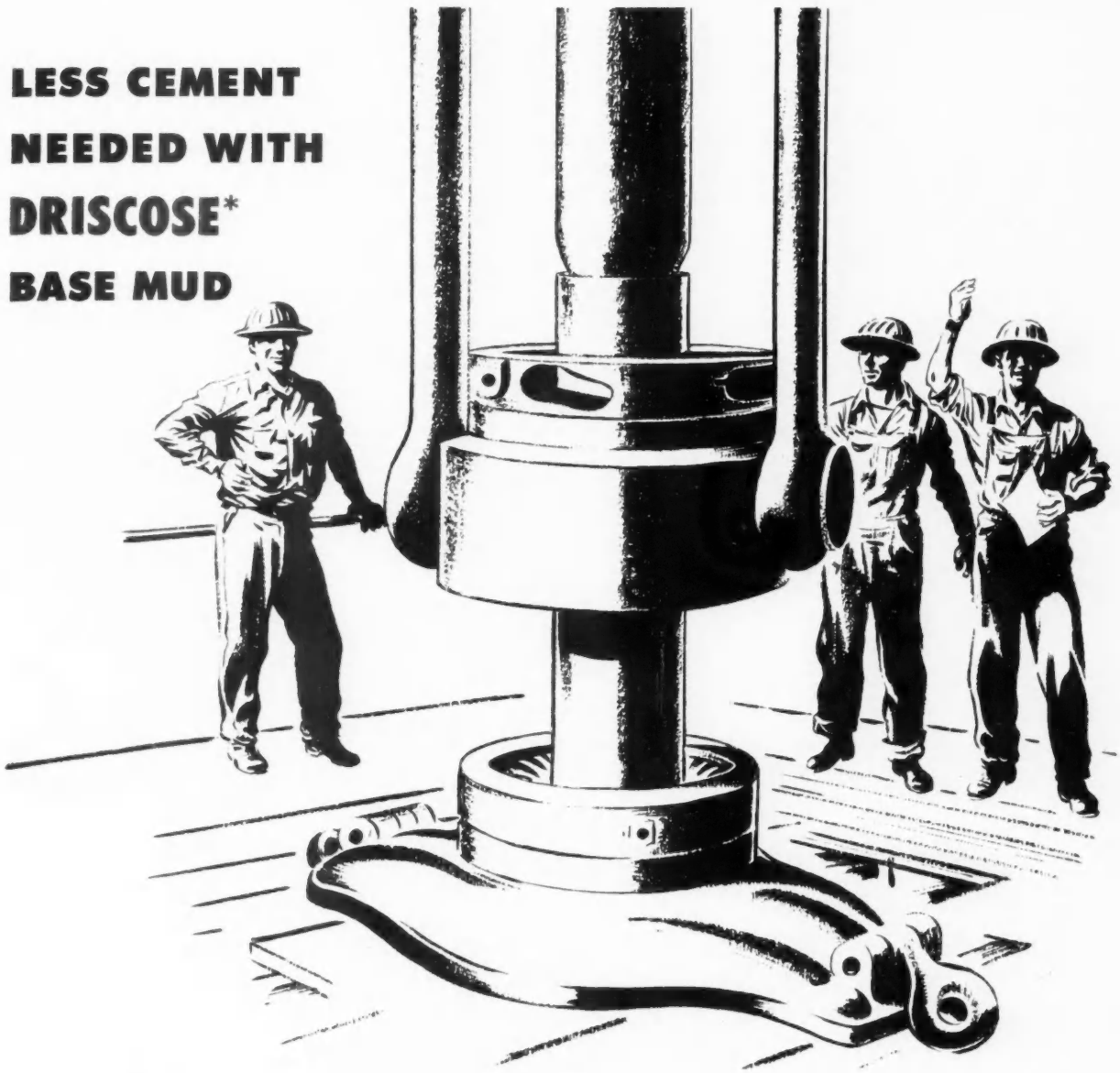
In the above table the word "discretionary" means discretionary with the government. Taxes and fees are converted from local currency at closest exchange rate which would be used by company. Some rates (see Iran under Middle East above) have changed and are given for comparison only.

TABLE 3
Exploitation Concessions
Selected Area and Duration Requirements

COUNTRY	Initial Period (Years)	Extension (Years)	Maximum Area (Acres)
Argentina	Until end of commercial exploitation		No limit
British Honduras	30	30	64,000
British Guiana	30		64,000
BWI (Bahamas)	30	30	64,000
Canada—Quebec	10	10 or more	1,220
Colombia	30	10	494,000
Costa Rica	30	15	494,208
Cuba	30		19,768
Ecuador	40	10	123,500
Egypt	30	15	24,700
El Salvador	Discretionary	Discretionary	Discretionary
England	50	25	64,000
France	99	25	No limit
Germany	30	10 or more	No limit
Guatemala	30	20	247,000
Haiti	50		No limit
Honduras	20		No limit
Italy	Discretionary	Discretionary	No limit
Morocco (French)	50	25	No limit
Nicaragua	50		1,236
New Zealand	42	21	64,000
Netherlands Indies	40	Possible	No limit
Panama	30	10	6,177
Papua (New Guinea)	21	21 (unlimited renewal)	320,000
Peru	40	20	24,700
	50	25	61,750
Sicily	30		Unspecified
Spain	Perpetual		No maximum
Trinidad	30	30	100,000
Tunisia	99 years		No limit
Venezuela	40	40	12,350

In the above table the word "discretionary" means discretionary with the government.

LESS CEMENT NEEDED WITH DRISCOSE* BASE MUD



DRISCOSE saves money! Time after time **DRISCOSE** Base Mud has demonstrated its ability to increase drilling rates and cut well costs. Caliper logs show how **DRISCOSE** helps drillers keep holes close to the bit gauge. You save on weighting materials. And less cement is required to case holes drilled with **DRISCOSE**. Furthermore, **DRISCOSE** gives you a thin, strong filter cake that cuts water loss. In conventional or emulsion muds, **DRISCOSE** gives you the very best in thixotropic qualities. Small amounts of **DRISCOSE** give your mud excellent suspension qualities with good control of viscosity and gel; also fine lubricating qualities. Order **DRISCOSE** today from your mud dealer.

DRILL WITH

DRISCOSE*

DRILLING SPECIALTIES COMPANY BARTLESVILLE, OKLAHOMA

*DRISCOSE is a trademark for Sodium Carboxymethylcellulose.

forbidding operations within a certain distance of frontiers, set minimum production, as in Ecuador, or subject concessionaire to state approval for almost every important operation. The obligation to set aside enough of production to satisfy national consumption, as found in Portugal, is not new and will probably be included in most future legislation.

Lately, as in Mozambique, it is combined with a government preferential price and a purchase option up to 25 percent of production. The same tendency is present in Peru, where national consumption stocks may be purchased at government prices far below the market. Another growing obligation is the refining commitment, which has always existed since early date in the British Colonies and in some Latin American countries and has spread to the Middle East. Where the obligation is not found, it is common to find some incentive given, such as royalty reduction to refiners as in Cuba.

Personnel obligations are often conditioned on production. When, in the Middle East, production reaches 15,000 barrels daily, the producer is obligated to create industrial education centers for nationals and to establish facilities for primary study.

GORDON BARROWS is a former member of Standard Oil Company of California and its foreign operations subsidiary, Richmond Petroleum Company of California. He is now head of Foreign Petroleum Consultants, specializing in foreign economic and legal reporting for oil companies interested in operations abroad.

Governmental Intervention: Intervention by foreign governments in petroleum operations consists:

- Of efforts to influence company activities through stock participation and regulation of company structure.
- Of the establishment of governmental monopolies or of governmental agencies in competition with private petroleum companies.

In regulation of company structure, the trend is mostly to require government authorization and approval of the bylaws, as in Denmark and Holland. Few states require the exclusive use of national companies, as do France and Cuba. Capital stock minimums are usually set, with growing requirements that such stock must be participated in by the state or by nationals. In Egypt the majority of stock must be Egyptian, in Peru 30 percent of stock must be offered to nationals and in the Middle East one-fourth to one-fifth of stock, including that of subsidiaries, is to be so offered.

Usually the governments' stock is held by state petroleum agencies. But it is held directly by the government in Italy, Colombia or Bolivia and always directly, in the case of major companies operating abroad, such as Germany before the war, with the Europaische Petroleum Union, and France through the Compagnie Francaise des Petroles. This participation may be to the detriment of company international operations since many countries, such as Colombia, prohibit the entrance of companies having government participation.

Formation of governmental petroleum agencies abroad is a permanent and growing feature. The agencies fall into four classes, depending upon the extent of their activities.

1. Those having advisory functions to the government on petroleum policy, such as the National Petroleum Council of Colombia or the National Petroleum Council of Brazil, before it took over Petrobras.

2. Agencies which operate in competition with private industry under almost the same laws, as Empresa Petrolera Fiscal of Peru, which was established in 1948, or the Regie Autonome des Petroles of France (1939).

3. In time these agencies tend to become the third class—partial governmental monopolies, such as l'Azienda Generale Italiana Petroli (AGIP) of Italy (1926) or Yacimientos Petroliferos Fiscales (YPF) of Argentina (1932).

4. Direct governmental monopoly, beginning with institution of nationalization in Russia 1917 (now COMBINATS, begun 1940), Petroleos Mexicanos of Mexico (1940), Brazilian Petroleum Corporation (1952), or Chile, where governmental monopoly began in 1926.

The latest example, and the most important, is Iran, where the outcome of the present struggle will determine much of the future course private capital is to play in the foreign oil industry.

TABLE 4
Foreign Exploration and Exploitation Legislation
Partial List of Basic Laws

Argentina	Law No. 11,688 of 21 December, 1932, Decree No. 60,788 of 13 May, 1935, Law No. 12,161.
Austria	Mining Law of 23 May, 1854, Law of 1 December, 1947, Law of 31 August, 1948.
Bahamas Islands	Petroleum Act No. I of 1945 and Petroleum Regulations of 1945.
Bolivia	Petroleum Law of June 20, 1921. Also Decree-Law of Nov. 5, 1937 and Decree-Law of Oct. 24, 1936.
Brazil	Constitution of 10 November, 1937, Art. 16, 18, and 143. Decree-Law No. 538, Decree-Law No. 1985 of 29 January, 1940, 1952 "Petrobras" Law.
British Honduras	Petroleum Ordinance (Production) No. 17 of 1937, Oil Mining Regulations (Stat. Inst. No. 56) of 1949.
Canada—Quebec	Law of 1925, Modified by laws of 1941 and 1947.
Chile	Law No. 4281 of February 15, 1928.
Colombia	Law No. 37 of 4 March, 1931, modified by Law No. 160 of 14 November, 1936. Law No. 31 of 5 December, 1946, Law No. 165 of 27 December, 1948, Decree-law of 1949 (Fiscal requirements), Decree-law No. 10 of 1950, Decree 2169 of July 3, 1950, Decree No. 3419 of 1950.
Costa Rica	Constitution of 1949, Art. 121. Also see Honolulu Oil Contract, 21 December, 1948.
Cuba	Law of Combustible Minerals of 9 May, 1938. Regulatory Decree 2625 of 16 October, 1939, Constitution of 10 October, 1940.
Denmark	Law of 13 February, 1932, modified by laws of 31 January, 1936 and 29 June, 1940.
Ecuador	Law No. 70 of 6 August, 1937, as amended 8 April, 1938.
Egypt	Law No. 136 of 6 July, 1948.
El Salvador	Code of Mines of 1922, amended by Decree-law of 11 May, 1923.
England	Petroleum Production Act of 28 July, 1934. Petroleum Production Regulations of 15 May, 1935.
France	Mining Law of 21 April, 1810 and subsequent regulations.
Algeria	French Mining Law of 21 April, 1810, Law of 16 June, 1951.
Madagascar	Decree of 20 December, 1938 and regulations.
French Morocco	Algeciras Act of 7 April, 1906 (Art. 112) Dahir 1 November, 1929.
Tunisia	Beyical Decree of 29 December, 1913 and modifications thereto.
Germany	Law of Mines of 24 June, 1865. Laws of 12 May 1934 and of 4 December, 1934. Decrees of 11 September, 1936. Law of 24 September, 1937.
Guatemala	Decree 649 of 30 August, 1949, effective September, 1949.
Guiana (British)	Act No. 41 of 1939. Operating regulations of February, 1940.
Haiti	Decree (Mining) Law No. 337 of 20 December, 1943.
Honduras	Mining Code (Decree No. 64 of February, 1937) as amended; Decree No. 43 of 30 January, 1942.
Italy	Mining Law No. 1443 of 1927.
Mozambique	Decree of 20 September, 1906. Decree of 9 December, 1909.
New Zealand	Petroleum Act No. 27 of 11 December, 1937.
Netherlands Indies	Mining Law of 23 May, 1899, modified by laws of 26 September, 1910, 20 July, 1918 and 4 August, 1938.
Netherlands	Law of 1810, modified by Law of 27 April, 1904 and by Law of 6 October, 1908.
Nicaragua	Mining Code of 1906, Law on Hydrocarbons of 29 November, 1933. Constitution of 1948.
New Guinea—Papua	Ordinance 13 of 1938, amended by Ordinance No. 2 of 1939 and Ordinance 14 of 1939.
Panama	Law of 27 March, 1923. Compare Sinclair contract of 1946.
Peru	Law 11780 of 12 March, 1952, regulations by Supreme Decree No. 1 of 10 June, 1952.
Sicily	Law No. 30 of 20 March, 1950.
Spain	Mining Law of 19 July, 1944. Regulatory Decree of 9 August, 1946.
Portugal	Decree-Law of 1 August, 1930, No. 18713. Decree-Law 27635 of 3 April, 1937, Art. 3 and 4.
Roumania	Decree-Law of 17 July, 1942, modified.
Trinidad	Land Regulations of December 7, 1934 and amendments thereto. Law of 24 December, 1917, Decree-Law of 27 August, 1942.
Uruguay	Decree-Law No. 10-327 of January, 1943.
Venezuela	Law of 13 March, 1943.

24 ACRES *Cover the World*

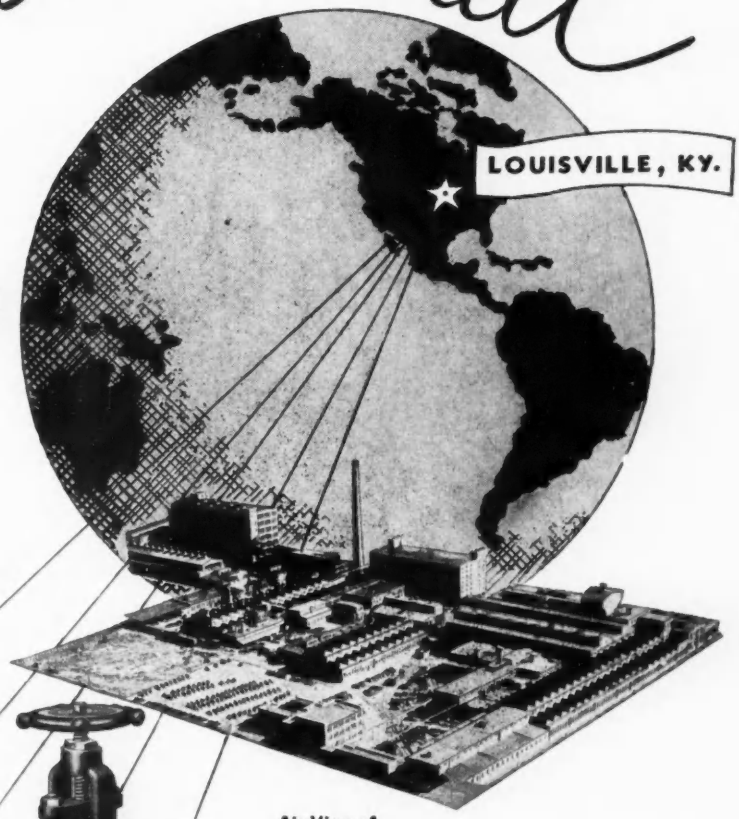
. . . with TOP QUALITY

DROP FORGED STEEL

VALVES, FITTINGS and FLANGES

by

Vogt



Air View of
Henry Vogt Machine Co.

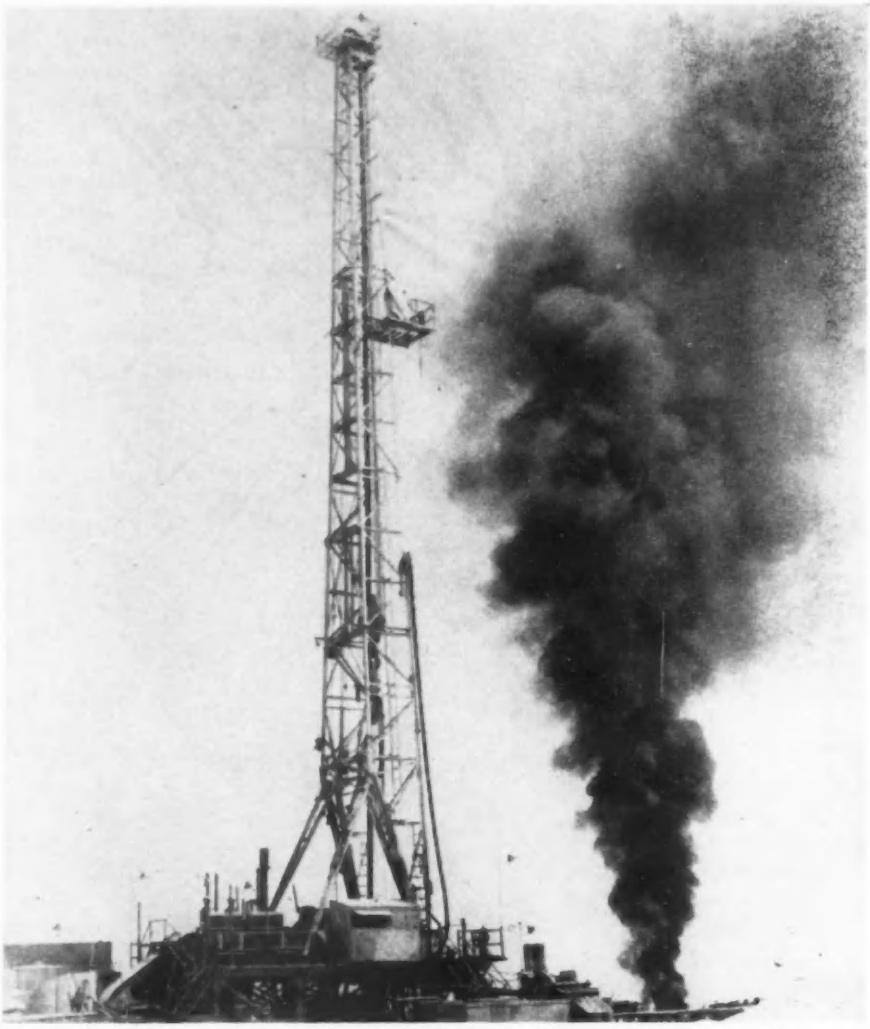
This 24 acre Vogt plant supplies the most comprehensive line of top quality *drop forged* steel piping materials anywhere available to industry. That's why they're the choice of leading refineries, power plants, chemical plants, etc., the world around!

OUR COMPLETE LINE INCLUDES

Flanged, Screwed and Socket Weld End Globe, Gate and Check Valves • Ells, Tees and Crosses • Couplings • Bushings • Plugs • Unions • Flanges and Flange Unions • Welding Heads

HENRY VOGT MACHINE CO. LOUISVILLE 10, KY.

Branch Offices: New York, Philadelphia, Chicago, Cleveland, St. Louis, Dallas, Charleston, W. Va.



American Independent Oil Company Photo

WAFRA 4, recently completed as a relatively small producer by American Independent Oil Company on behalf of itself and Pacific Western Oil Corporation in the Kuwait-Saudi Arabia Neutral Zone, is the first discovery made in the Middle East by U. S. companies other than the "Big Five" American companies participating in Bahrain and Saudi Arabia production.

Who Produces World's Oil

Seven companies . . . 5 American and 2 British . . . produced half of 1952's 12,337,812 barrels.

SEVEN OIL COMPANIES, five American and two British, produced one-half of the total crude output of the world last year. The world's total oil production amounted to 12,337,812 barrels daily, including 936,533 produced by the USSR.

Combined output of the seven companies—Standard Oil Company (N. J.), Royal Dutch-Shell Group, Gulf Oil Corporation, The Texas Company, Standard Oil Company of California, Anglo-Iranian Oil Company and Socony-Vacuum Oil Company—averaged 6,233,100 barrels per day.

Remaining production in the free world was produced by thousands of small companies, independent producers and government-owned companies in Mexico, Argentina, Iran, Turkey and Bolivia.

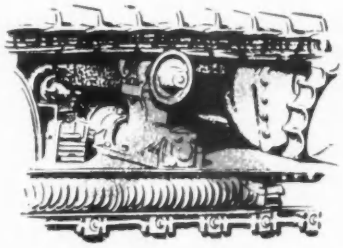
The Russian Government was the largest single producer, while among companies in the free world, Arabian American Oil Company (owned by Jersey Standard, Texaco, California Standard and Socony-Vacuum) was the largest producer with a daily average of 824,756 barrels, all in Saudi Arabia. Creole Petroleum Corporation, a Jersey Standard affiliate, operating in Venezuela, was second in private company ranks with a daily average of 804,000 barrels. During 1953, however, Kuwait Oil Company (owned by Anglo-Iranian and Gulf Oil) has moved into the No. 1 spot in free world crude production.

Total production of the seven major companies in 1952 is shown in Table 1.

TABLE I
Crude Production by Seven Major Companies
(Barrels Daily)

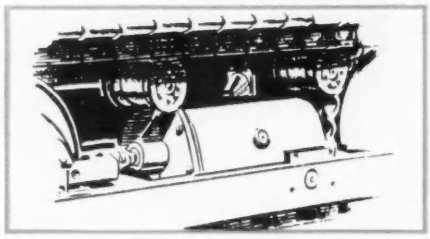
PRODUCING AREA	Standard Oil Company (N.J.)	Royal Dutch-Shell Group	Gulf Oil Corporation	The Texas Company	Standard Oil of California	Anglo-Iranian Oil Company	Socony-Vacuum Oil Company
United States	469,000	329,000	261,200	357,800	312,300	.....	249,000
Canada	76,000	.....	9,000	10,000	7,600	.....	1,000
Total North America	545,000	329,000	270,200	367,800	319,900	.....	250,000
Venezuela	804,000	555,100	270,500	34,000	17,300	.....	56,500
Other South America	102,000	62,300	.....	17,000	.....	.....	15,600
Total South America	906,000	617,400	270,500	51,000	17,300	.....	72,100
Western Hemisphere Total	1,451,000	946,400	540,700	418,800	337,200	.....	322,100
Europe and Africa	9,000	44,500	.....	.....	.....	3,400	16,000
Middle East	297,000	99,700	346,900	262,000	262,000	536,500	135,000
Far East	33,000	198,400	.....	9,300	9,300	.....	33,000
Eastern Hemisphere Total	339,000	342,600	346,900	271,300	271,300	539,900	184,000
WORLD TOTAL	1,712,000	1,289,000	887,600	690,100	608,500	539,900	506,100

Crude production figures are gross production. Total oil production of wholly-owned subsidiaries of the above companies is shown, while the companies' equity in gross production of affiliates is shown.

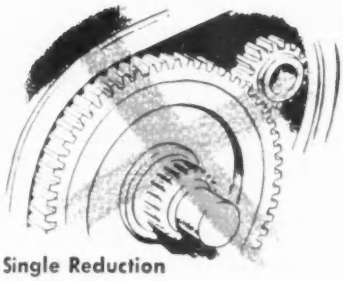


Open or Partly Shielded
Track Release Mechanism

Oil Enclosed Track Release Mechanism

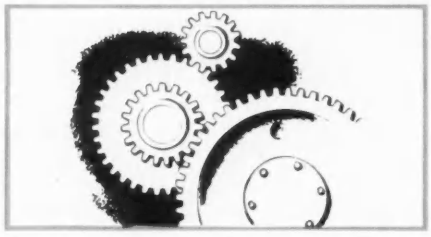


Operating in oil and *sealed* against dirt and moisture, the Allis-Chalmers track release mechanism seals out mud, ice and debris. Because it's completely sealed, the release mechanism is in working condition at all times — providing positive protection when obstacles jam into the tracks.



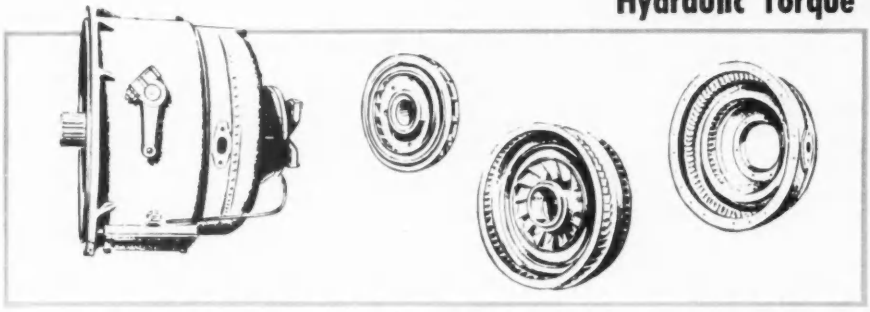
Single Reduction
Final Drive

Double Reduction Final Drive



With smaller gears and shorter shafts, double reduction final drives provide better bearing and gear alignment. The "live" axle permits smaller, more serviceable seals. Equally important, double reduction drive provides for smooth, clean bottom construction and the extra ground clearance so necessary on rough terrain.

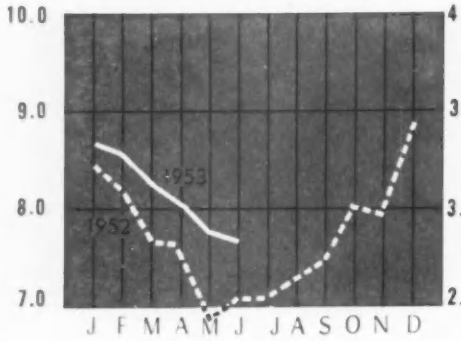
Hydraulic Torque Converter Drive



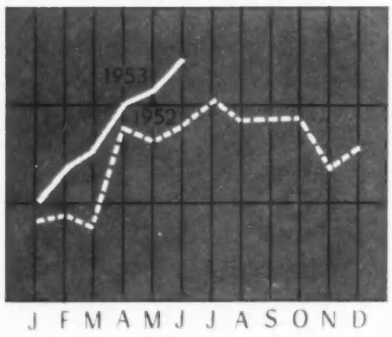
The Allis-Chalmers HD-20 is the only crawler tractor in the industry where torque converter is standard equipment and part of the tractor's basic design. With torque converter there is greater pay load capacity because this unit automatically balances travel speed to the load — no idle horsepower, no worry about engine stalling. And with most shifting eliminated, there's far less operator fatigue.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

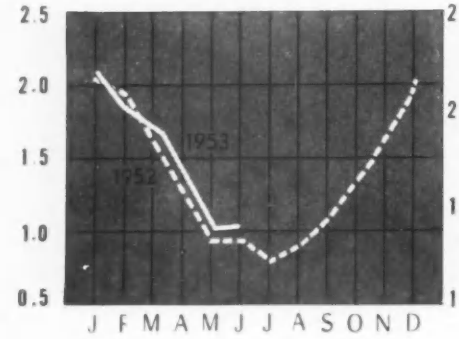
All Oils Total Demand, by Months
(Millions of Barrels Daily)



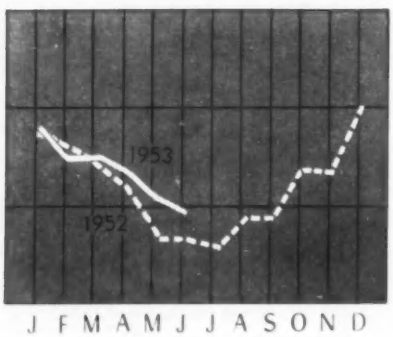
Motor Fuel Total Demand, by Months
(Millions of Barrels Daily)



Distillate Fuel Oil Total Demand, by Months
(Millions of Barrels Daily)



Residual Fuel Oil Total Demand, by Months
(Millions of Barrels Daily)



Oil Use in the U. S. Continues to Climb

Producers and refiners step up operations to record levels as demand shows normal growth.

By L. J. LOGAN, WORLD OIL Staff

U. S. PRODUCERS and refiners of petroleum are carrying on operations at record-breaking levels in 1953, in meeting unprecedented demand for petroleum products.

Demand for petroleum is showing a normal increase or growth this year, after having risen less than normally in 1952.

To supply consumers with petroleum products, all sources of current supply have been increased above last year's levels, including domestic production of crude oil, U. S. output of natural gasoline, and imports of foreign crude and products.

With demand for oils promising to continue well above last year, it is indicated that domestic production will proceed at record levels during the remainder of the year.

Total demand for all oils averaged 8,147,000 barrels daily during the first half of 1953, an increase of 6.7 percent over the 7,636,000 daily of the initial half of 1952. This gain was recorded although exports were up only 1.4 percent, as domestic consumption was 7.0 percent above last year.

The increase of 6.7 percent in total demand for the first half of this year was the net result of rather widely varying gains for the individual months. Increases over last year, by months, were: January 2.3 percent, February 4.9 percent, March 7.2 percent, April 5.2 percent, May 13.7 percent, and June 8.4 percent. The subaverage gains in January and February reflected lagging use of heating oil and residual fuel oil due to relatively mild winter weather. In subsequent months, use of fuel oils showed somewhat better gains over last year.

U. S. production of crude oil averaged 6,483,000 barrels daily in the first half of 1953, an increase of 6.1 percent over the 6,112,000 daily in the like period last year. In June of this year, crude output averaged 6,461,000 barrels per day, an increase of 264,000 daily or 4.3 percent over the 6,197,000 daily of June last year.

Natural gasoline production of 649,000 barrels daily in the first half of 1953 was 57,000 barrels or 9.6 percent above the 592,000 barrels daily in the first half of 1952.

Total imports of oils averaged 1,069,000 barrels daily in the first six months of 1953, an increase of 132,000 barrels or 14.1 percent over the 937,000 daily a year earlier. Imports of refined products rose only moderately to 418,000 barrels daily in this year's first 6 months from 411,000 daily in the like months last year. But crude oil imports climbed to 651,000 barrels daily from 526,000, an increase of

Need Extra Copies of This Issue?

A limited number of extra copies of this issue were printed and may be obtained for $1 a copy. Send your order and remittance to:

WORLD OIL
Department 715
P. O. Box 2608
Houston 1, Texas

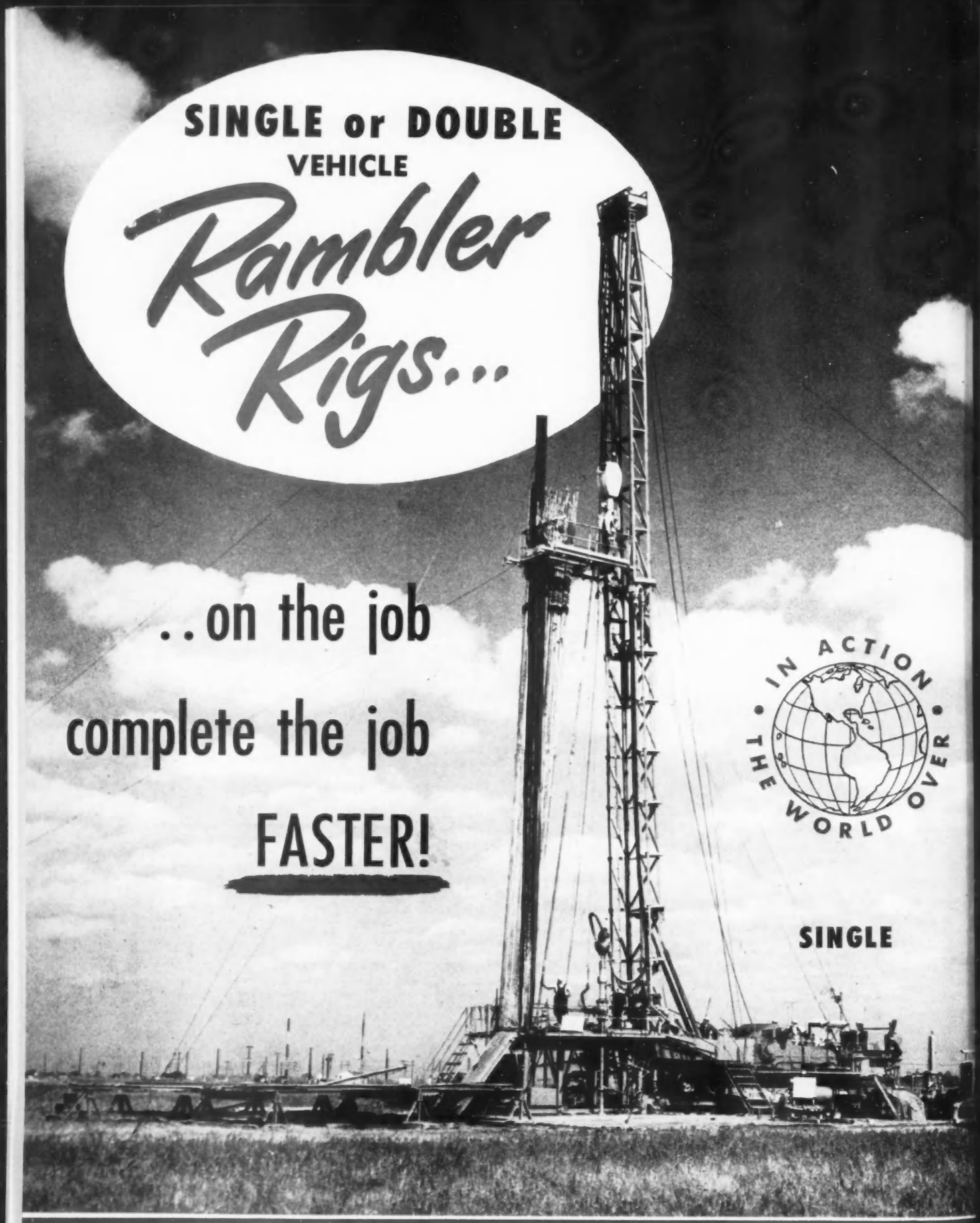
Demand for and Supply of All Oils, Crude Oil, Motor Fuel, Kerosine, Fuel Oils and Lubricants

Sources: U. S. Bureau of Mines Except May and June, 1953, from A.P.I. Weekly Statistical Bulletins.

(THOUSANDS OF BARRELS DAILY)

ITEM	First 6 Months 1952	First 6 Months 1953	Percent Diff.
ALL OILS			
Domestic Production, Total	1,220,378	1,291,190	+ 5.8
(Daily Average)	6,705	7,134	+ 6.4
Crude Petroleum	1,112,503	1,173,462	+ 5.5
(Daily Average)	6,112	6,483	+ 6.1
Natural Gasoline and Benzol	107,875	117,728	+ 9.1
(Daily Average)	593	650	+ 9.6
Imports, Total	170,585	193,522	+ 13.4
(Daily Average)	937	1,069	+ 14.1
Crude Petroleum	95,675	117,900	+ 23.2
(Daily Average)	526	651	+ 23.8
Refined Products	74,910	75,622	+ 0.95
(Daily Average)	411	418	+ 1.7
Changes in Stocks, All Oils	+1,133	+10,081	.....
(Daily Average)	+6	+56	.....
Stocks, Beginning of Period	634,109	673,754	+ 6.3
Crude Oil	255,783	271,928	+ 6.3
Refined Products	370,140	394,019	+ 6.5
Natural Gasoline	8,186	7,807	— 4.6
Stocks, End of Period	635,242	683,835	+ 7.6
(Days' Supply)	83.2	83.9	+ 0.8
Crude Oil	285,964	280,785	— 1.8
Refined Products	339,243	394,200	+ 16.2
Natural Gasoline	10,035	8,850	— 1.8
Demand, Total	1,389,830	1,474,631	+ 6.1
(Daily Average)	7,636	8,147	+ 6.7
Exports, Total	79,614	80,098	+ 0.6
(Daily Average)	437	443	+ 1.4
Crude Petroleum, Total	14,899	13,226	— 11.2
(Daily Average)	82	73	— 11.0
Refined Products, Total	64,715	66,872	+ 3.3
(Daily Average)	355	369	+ 3.9
Domestic Demand, Total	1,310,216	1,394,533	+ 6.4
(Daily Average)	7,199	7,705	+ 7.0
CRUDE PETROLEUM			
Supply:			
Domestic Production, Total	1,112,503	1,173,462	+ 5.5
(Daily Average)	6,113	6,483	+ 6.1
Imports, Total	95,675	117,900	+ 23.2
(Daily Average)	526	651	+ 23.8
Change in Stocks	+30,181	+8,857	.....
(Daily Average)	+166	+49	.....
Domestic Crude	+27,223	+6,147	.....
Foreign Crude	+2,958	+2,710	.....
Stocks, Beginning of Period	255,783	271,928	+ 6.3
Domestic Crude	250,480	263,625	+ 5.2
Foreign Crude	5,303	8,303	+ 56.6
Stocks, End pf Period	285,964	280,785	— 1.8
(Days' Supply)	44.2	39.6	— 10.4
Domestic Crude	277,703	269,772	— 2.9
Foreign Crude	8,261	11,013	+ 33.3
Supply, Total	1,177,997	1,282,505	+ 8.9
(Daily Average)	6,473	7,086	+ 9.5
Demand:			
Runs to Stills, Total	1,155,041	1,261,557	+ 9.2
(Daily Average)	6,346	6,970	+ 9.8
Domestic Crude	1,062,670	1,147,846	+ 8.0
(Daily Average)	5,839	6,342	+ 8.6
Foreign Crude	92,371	113,711	+ 23.1
(Daily Average)	508	628	+ 23.6
Exports, Total	14,899	13,226	— 11.2
(Daily Average)	82	73	— 11.0
Transfers to Fuel Oil Stocks	4,697	3,890	— 17.2
(Daily Average)	26	21	— 19.2
Used as Fuel, and Losses	3,360	3,832	+ 14.0
(Daily Average)	18	21	+ 16.7
Demand, Total, All Crude	1,177,997	1,282,505	+ 8.9
(Daily Average)	6,473	7,086	+ 9.5
Domestic Crude	1,085,200	1,167,315	+ 7.6
(Daily Average)	5,963	6,449	+ 8.1
Foreign Crude	92,717	115,190	+ 24.2
(Daily Average)	510	637	+ 24.9
KEROSINE			
Production, Total	63,327	67,630	+ 6.8
(Daily Average)	348	374	+ 7.5
Percent Yield from Crude	5.5	5.4	— 1.8
Change in Stocks	—4,027	—180	.....
(Daily Average)	—22	—1	.....
Stocks, Beginning of Period	27,088	27,529	+ 1.6
Stocks, End of Period	23,061	27,349	+ 18.6
(Days' Supply)	62.3	72.9	+ 17.0
Demand, Total	67,354	67,810	+ 0.7
(Daily Average)	370	375	+ 1.4
Exports, Total	4,338	4,353	+ 0.3
(Daily Average)	24	24	.....
Domestic Demand	63,016	63,457	+ 0.7
(Daily Average)	346	351	+ 1.4

ITEM	First 6 Months 1952	First 6 Months 1953	Percent Diff.
MOTOR FUEL			
Production, Total	556,156	623,331	+ 12.1
(Daily Average)	3,056	3,444	+ 12.7
Refinery Gasoline, Total	488,803	556,080	+ 13.8
(Daily Average)	2,686	3,072	+ 14.4
(Yield from Crude)	42.3	44.1	+ 4.3
Natural Gasoline, etc.	107,712	117,510	+ 9.1
(Daily Average)	592	649	+ 9.6
Benzol	163	218	+ 33.7
Less Sales of L.P.G.	38,583	46,141	+ 19.6
Less Transfers Cycle Prods.	1,939	2,216	+ 14.3
Less Exports, Losses, etc.	.....	2,120	.....
Imports, Total	1,158	162	— 86.0
(Daily Average)	6	1	— 83.3
Change in Stocks	—13,039	+10,512	.....
(Daily Average)	—72	+58	.....
Stocks, Beginning of Period	135,306	135,599	+ 0.2
Finished Gasoline	127,120	127,792	+ 0.5
Natural Gasoline	8,186	7,807	— 4.6
Stocks, End of Period	122,267	146,111	+ 19.5
(Days' Supply)	39.0	43.1	+ 10.5
Finished Gasoline	112,232	137,261	+ 22.3
Natural Gasoline	10,035	8,850	— 11.8
Demand, Total	570,353	612,981	+ 7.5
(Daily Average)	3,134	3,387	+ 8.1
Exports, Total	15,287	19,559	+ 27.9
(Daily Average)	84	108	+ 28.6
Domestic Demand	555,066	593,422	+ 6.9
(Daily Average)	3,050	3,279	+ 7.5
DISTILLATE FUEL OIL			
Production, Total	246,282	264,882	+ 7.6
(Daily Average)	1,353	1,463	+ 8.1
Percent Yield from Crude	21.3	21.0	— 1.4
Transfers from Crude	1,345	1,049	— 22.0
(Daily Average)	7	6	— 14.3
Imports, Total	1,234	1,978	+ 60.3
(Daily Average)	7	10	+ 42.9
Change in Stocks	—20,708	—14,417	.....
(Daily Average)	—114	—80	.....
Stocks, Beginning of Period	86,619	98,895	+ 14.2
Stocks, End of Period	65,911	84,478	+ 28.2
(Days' Supply)	44.5	54.2	+ 21.8
Demand, Total	269,569	282,326	+ 4.7
(Daily Average)	1,481	1,560	+ 5.3
Exports, Total	15,211	18,895	+ 24.2
(Daily Average)	83	104	+ 25.3
Domestic Demand	254,358	263,431	+ 3.6
(Daily Average)	1,398	1,455	+ 4.1
RESIDUAL FUEL OIL			
Production, Total	224,082	226,837	+ 1.2
(Daily Average)	1,231	1,253	+ 1.8
Percent Yield from Crude	19.4	18.0	— 7.2
Transfers from Crude	3,352	2,841	— 15.3
(Daily Average)	18	16	— 11.1
Imports, Total	67,939	71,147	+ 4.7
(Daily Average)	373	393	+ 5.4
Change in Stocks	+2,835	—4,619	.....
(Daily Average)	+15	—26	.....
Stocks, Beginning of Period	42,853	48,706	+ 13.7
Stocks, End of Period	45,688	44,087	— 3.5
(Days' Supply)	28.4	26.1	— 8.1
Demand, Total	292,538	305,444	+ 4.4
(Daily Average)	1,607	1,688	+ 5.0
Exports, Total	15,871	13,365	— 15.8
(Daily Average)	87	74	— 15.0
Domestic Demand	276,667	292,079	+ 5.6
(Daily Average)	1,520	1,614	+ 6.2
LUBRICANTS			
Production, Total	27,518	24,970	— 9.3
(Daily Average)	151	138	— 8.6
Percent Yield from Crude	2.4	2.0	— 16.7
Change in Stocks	+77	—821	.....
(Daily Average)	.....	5	.....
Stocks, Beginning of Period	9,617	11,021	+ 14.6
Stocks, End of Period	9,694	10,200	+ 5.2
(Days' Supply)	64.2	71.8	+ 11.8
Demand, Total	27,441	25,791	— 6.0
(Daily Average)	151	142	— 6.0
Exports, Total	8,795	5,861	— 33.4
(Daily Average)	48	32	— 33.3
Domestic Demand	18,646	19,930	+ 6.9
(Daily Average)	102	110	+ 7.8



IDECO Hydrair 35 Rambler Rig with 103 ft. IDECO Kwik-Lift Mast working over a deep well for a major company.

IDECO

ONE OF THE DRESSER INDUSTRIES

A DIVISION OF DRESSER EQUIPMENT CO.

Job-Rated

FOR EVERY DEPTH

One rig does three jobs: drilling, service, and work-over

SINGLE

Rambler Rigs move onto location rigged up ready to operate.

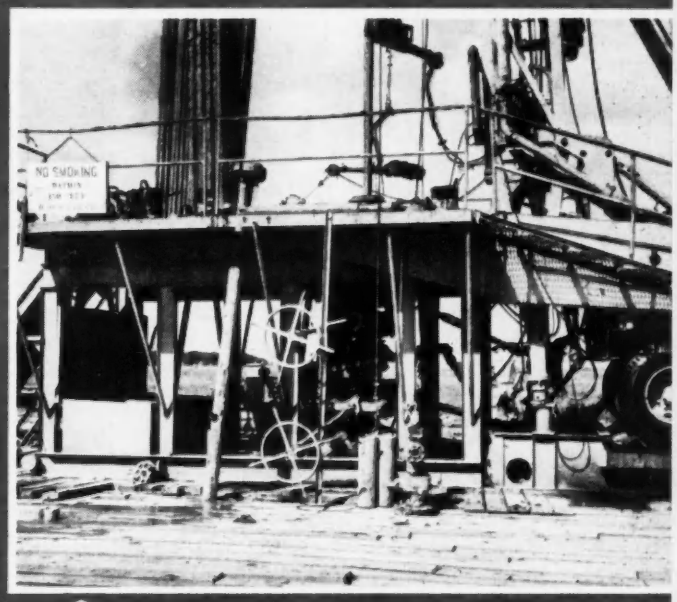
RAMBLER RIGS are field proved . . .

faster . . . more economical . . . in action the world over.

Single truck or trailer mounted Rambler Rigs combine the IDECO Hydrair Hoist with its power plant and the IDECO Kwik-Lift Mast . . . transported rigged up . . . ready to operate in minutes after moving on location. The new double vehicle Rambler carries the drilling rig on one vehicle and mast on another . . . reducing the loads on each vehicle.

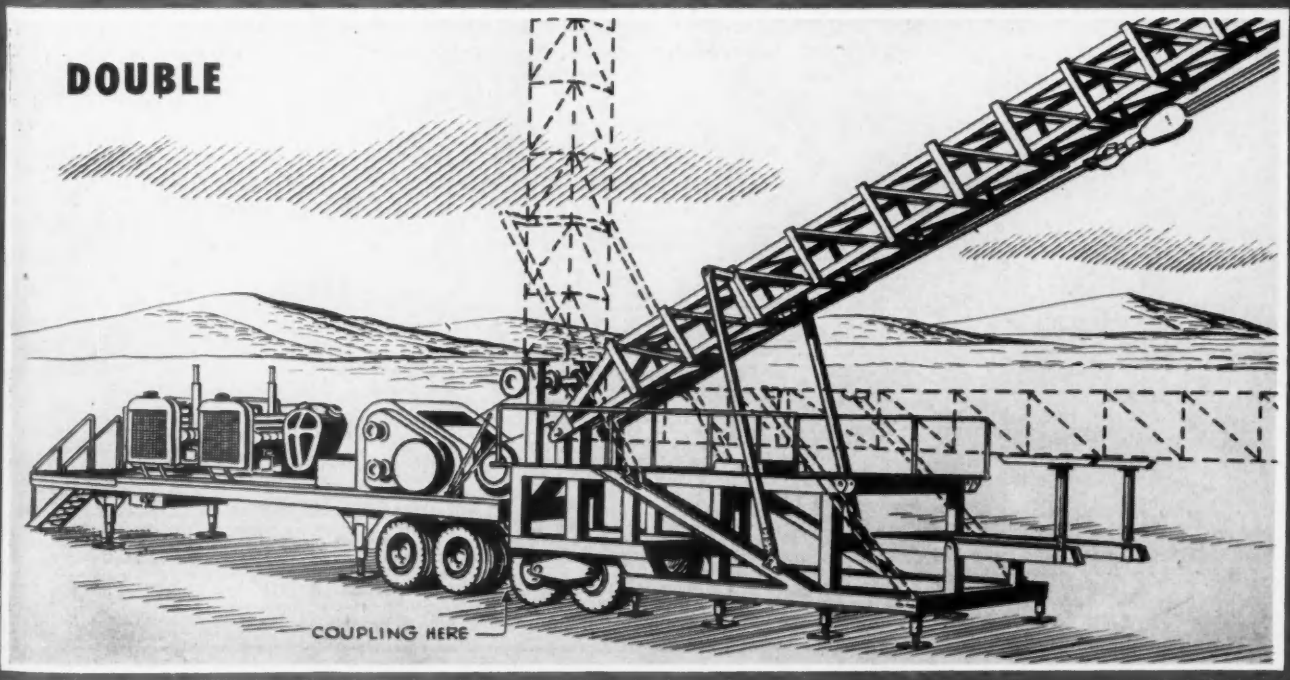
Rambler Rigs are available with drawworks powered by engines of 150 to 525 horsepower, and with masts from 65 to 103 ft. in height.

For additional information on the many Rambler Rig sizes, capacities, and horsepower combinations, write IDECO, Atlantic Bldg., Dallas, Texas.



Substructures are available from heights of 6'6" to 9'2" and with capacities from 100,000 to 400,000 pounds.

DOUBLE



The "Double Rambler" 2-vehicle rig has been developed by IDECO to fill the long-felt need for *larger, portable,* multiple-purpose rigs.

Motor fuel in record demand . . . with substantial gains over '52

125,000 barrels daily or 23.8 percent.

Current supply was fairly well keyed to current demand in the first half of 1953. Total stocks of refined products, in the aggregate, showed virtually no net change, and stocks of crude oil were increased about 10 million barrels.

Crude runs to stills at U. S. refineries averaged 6,970,000 barrels daily in the first half of 1953, an increase of 9.8 percent over the 6,346,000 daily of the like period of 1952.

Motor fuel, or gasoline, the industry's most important product, has been in record demand this year, showing substantial gains over last year. Total demand for this product averaged 3,387,000 barrels daily in the first half of 1953, an increase of 8.1 percent over the 3,134,000 daily of the like period last year, with exports up 28.6 percent and domestic consumption up 7.5 percent. As in the case of all oils, the demand for motor fuel showed varying increases over last year in the different months. The gains were: 3.3 percent in January, 9.3 percent in February, 13.0 percent in March, 4.2 percent in April, 8.0 percent in May, and 10.7 percent in June. January and April increases were considerably smaller than average, and that of March was well above average.

Total demand for kerosine averaged 375,000 barrels daily in the first half of 1953, an increase of 5000 barrels or 1.4 percent over the similar period last year. The small size of this increase was a result of the same weather conditions that held down use of fuel oils.

The total demand for distillate fuel oil in the first 6 months of 1953 averaged 1,560,000 barrels daily, an increase of 79,000 barrels or 5.3 percent over the 1,481,000 daily of the similar period of 1952. Exports showed a substantial increase, but domestic demand was up only 4.1 percent.

Residual fuel oil total demand of 1,688,000 barrels daily in the first half of 1953 was higher than in the like period last year by 81,000 barrels daily or 5.0 percent. Exports were down to 74,000 barrels per day from 87,000 last year. But domestic consumption of 1,614,000 barrels daily was 94,000 a day or 6.2 percent higher than a year previous.

Total demand for lubricants averaged 142,000 barrels daily in this year's first six months, a decrease of 9000 barrels or 6.0 percent from the 151,000 daily a year before. This decrease was caused wholly by a sharp decrease in exports. The exports of 32,000 barrels daily were 16,000 a day or 33.3 percent less than the 48,000 daily in the first half of 1952. Apparently, U. S. refiners have lost some export markets to new refineries in Europe and elsewhere. Domestic consumption of lubricants in this year's first half averaged 110,000 barrels daily, an increase of 8000 barrels or 7.8 percent over the 102,000 per day in the first half of last year.

STOCKS OF CRUDE PETROLEUM IN U. S., BY GRADES, AT MID-YEAR, 1952-1953

(Source: Weekly Reports of U. S. Bureau of Mines.)

(THOUSANDS OF BARRELS)

GRADE	July 5, 1952	July 4, 1953	Change
Pennsylvania Grade	2,228	2,653	+ 425
Other Appalachian	2,134	2,210	+ 76
Lima-Michigan	604	614	+ 10
Illinois-Indiana	12,211	11,332	— 879
Arkansas	3,115	2,789	— 326
Kansas	10,024	9,335	— 689
Louisiana	15,325	15,988	+ 663
North	2,352	2,667	+ 315
Gulf	12,973	13,321	+ 348
Mississippi	3,480	3,849	+ 369
New Mexico	7,542	7,450	— 92
Oklahoma	33,597	29,849	—3,748
Texas	140,345	134,749	—5,596
East Texas Proper	13,740	11,461	—2,279
West Texas	62,020	62,151	+ 131
Gulf Coast	29,943	26,424	—3,519
Other Texas	34,642	34,713	+ 71
Panhandle	3,519	3,998	+ 479
North	7,413	9,640	+2,227
South	5,623	5,358	— 265
Rest of State	18,097	15,717	—2,370
Wyoming	12,518	13,626	+1,108
Other Rocky Mountain	2,574	3,375	+ 801
California	31,298	33,671	+2,373
Foreign	8,524	10,532	+2,008
In California		3,039	.....
Other Foreign		7,493	.....
Total Crude Stocks in U.S.	285,519	282,022	—3,497

U. S. CRUDE RUNS TO STILLS, REFINING CAPACITY AND STOCKS OF MAJOR PRODUCTS, BY DISTRICTS

Data from Bureau of Mines, except May and June, 1953, and refinery capacities from API. Stocks are those at refineries, at bulk terminals, in transit and in pipe lines.

(Thousands of Barrels)

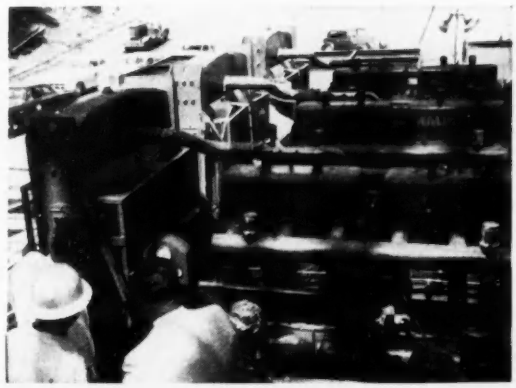
	CRUDE RUNS TO REFINERY STILLS													STOCKS OF MAJOR REFINED PRODUCTS							
	Capacity and Runs in June							Runs in First Six Months						Gasoline (Finished and Unfinished)		Kerosine		Distillate Fuel Oil		Residual Fuel Oil	
	Daily Capacity			Daily Runs			Percent Capacity Used		Total Amt. Run		Daily Runs			Stocks End of June		Stocks End of June		Stocks End of June		Stocks End of June	
REFINING DISTRICT	June 1952	June 1953	Perct. Diff.	June 1952	June 1953	Perct. Diff.	June 1952	June 1953	6 Mo. 1952	6 Mo. 1953	6 Mo. 1952	6 Mo. 1953	Perct. Diff.	1952	1953	1952	1953	1952	1953	1952	1953
East Coast	1,096	1,107	+ 1.0	1,125	1,061	— 5.7	102.6	95.8	181,222	187,636	996	1,037	+ 4.1	29,259	33,660	9,693	11,308	20,624	27,109	11,987	11,241
Appalachian	199	211	+ 6.0	187	196	+ 4.8	94.0	92.9	31,898	35,994	176	199	+13.1	5,249	4,980	729	885	1,335	1,281	1,049	699
Dist. 1	116	123	+ 6.0	110	106	— 3.6	94.8	86.2	19,239	19,497	106	108	+ 1.9	3,643	3,617	479	525	1,000	831	740	545
Dist. 2	83	88	+ 6.0	77	90	+16.9	92.8	102.3	12,659	16,497	70	91	+30.0	1,606	1,363	250	360	335	450	309	154
Ind.-Ill.-Ky.	1,328	1,398	+ 5.3	1,240	1,249	+ 0.7	93.4	89.3	210,786	226,027	1,158	1,249	+ 7.9	25,252	28,786	4,659	5,484	13,484	13,396	6,158	3,684
Okla.-Kans.-Mo.	620	646	+ 4.2	540	622	+15.2	87.1	96.3	91,444	104,350	503	577	+14.7	10,786	14,977	1,463	1,794	9,264	9,538	1,578	1,214
Texas Inland	290	305	+ 5.2	271	264	— 2.6	93.4	86.6	46,066	47,792	253	264	+ 4.3	4,246	6,004	405	475	1,443	1,568	1,009	1,322
Texas Gulf	1,682	1,790	+ 6.4	1,603	1,718	+ 7.2	95.3	96.0	268,144	314,737	1,473	1,739	+18.1	16,571	20,536	2,769	3,785	6,962	12,434	7,116	6,584
La. Gulf	507	565	+11.4	538	578	+ 7.4	106.1	102.3	93,771	98,879	515	546	+ 6.0	6,144	7,220	2,089	2,424	2,736	5,334	1,886	1,338
N. La.-Ark.	88	94	+ 6.8	85	87	+ 2.4	96.6	92.6	13,917	15,448	76	85	+11.8	2,780	3,143	520	494	935	790	220	110
Rocky Mtns.	274	281	+ 2.6	253	259	+ 2.4	92.3	92.2	41,575	44,734	228	247	+ 8.3	4,555	6,385	419	262	1,676	2,097	1,242	1,071
Dist. 3	22	22	.....	18	20	+11.1	81.8	90.9	3,181	3,489	17	19	+11.8	96	197	4	.....	71	36	39	30
Dist. 4	252	259	+ 2.8	235	239	+ 1.7	93.3	92.3	38,394	41,245	211	228	+ 8.1	4,459	6,188	415	262	1,605	2,061	1,203	1,041
California	1,194	1,257	+ 5.3	983	1,037	+ 5.5	82.3	82.5	176,218	185,960	968	1,027	+ 6.1	15,324	20,216	315	438	7,452	10,931	13,443	16,824
Total U.S.	7,278	7,654	+ 5.2	6,825	7,071	+ 3.6	93.8	92.4	1,155,041	1,261,557	6,346	6,970	+ 9.8	120,166	145,907	23,061	27,349	65,911	84,478	45,688	44,087

TO GET below 20,000 ft.

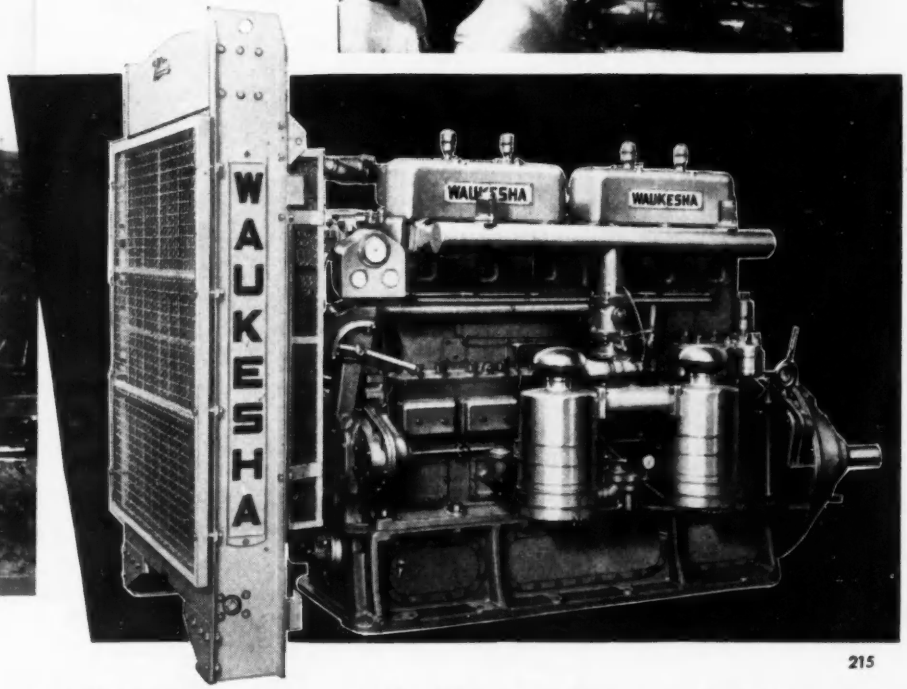
WILSON *Powers* BIGGEST RIG with Model 6-LRZU WAUKESHA

It's the biggest Wilson rig operating today! Built for San Joaquin Drilling Co., California . . . for the deepest drilling . . . down, down, below 20,000 ft. This new Wilson Super Titan Model Torcair rig has tremendous power, with its three Model 6-LRZU Waukeshas—the power plants of proved performance and deeper drilling dependability. Versatile for varying loads—they put out the plus power promptly, and smoothly as needed. For features: Bulletin 1481.

San Joaquin Drilling Company on location: Wilson Super Titan Model Torcair rig has three WAUKESHA 6-LRZU Big Gas power units (rig as designed can use five units).

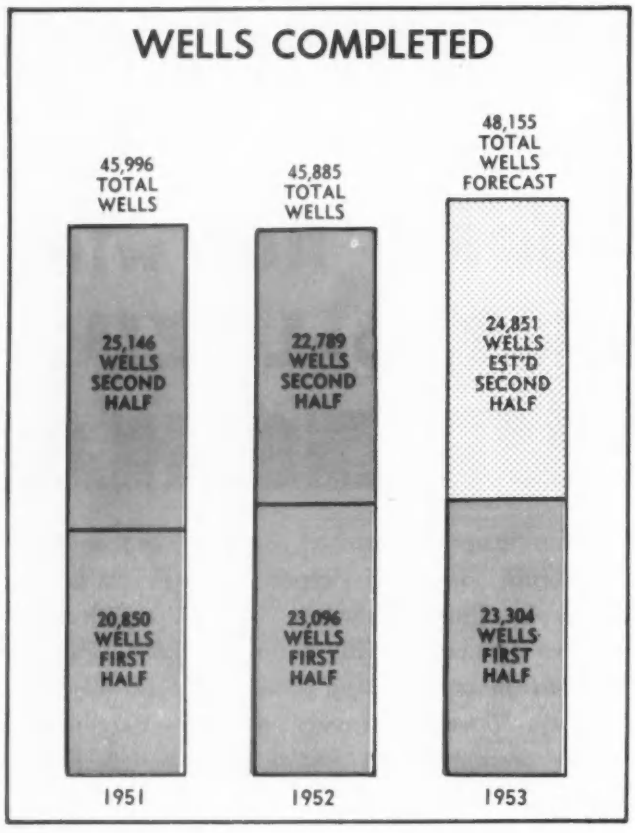


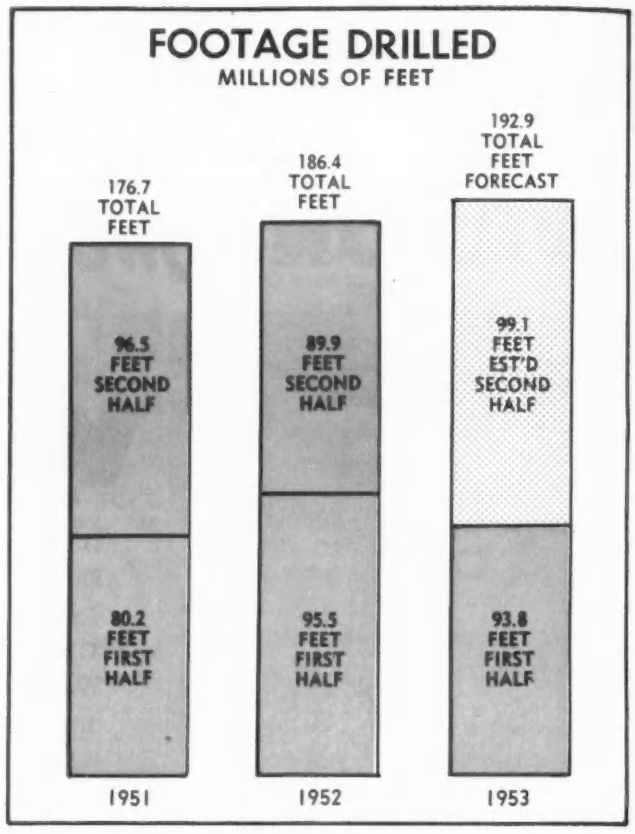
WAUKESHA 6-LRZU Big Gas Power Unit 6-cyl., 9⅜-in. x 8½-in.; 3520 cu. in. displ.



215

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS. • NEW YORK • TULSA • LOS ANGELES





U. S. Drilling Record Forecast in 1953

- **WORLD OIL predicts completion of 48,155 wells and 193 million feet of hole.**
- **An increase of 2270 wells and 6.5 million feet of hole over 1952.**

By WARREN L. BAKER, Editor,
and **CECIL W. SMITH,** Statistical Editor

UNITED STATES DRILLING activity during 1953 promises to attain an all-time peak. A record number of well completions, wildcat tests, and footage is indicated by WORLD OIL's mid-year drilling survey.

WORLD OIL now forecasts that 1953 will see:

- The completion of a total of 48,155 wells, an increase of 4.9 percent over the 45,885 wells drilled in 1952.
- The drilling of 192,949,755 feet of hole, 3.5 percent more than the 186,399,894 feet drilled during 1952.
- The completion of 10,468 wildcat tests, a gain of 3.8 percent over the 10,084 finished during 1952.

Here's Why. Several factors prompt WORLD OIL to predict such record drilling activity. Drilling was at an all-time peak during the first half of 1953. Completion of 23,304 wells during the first six months of the year compared with 23,096 in 1952. The second half of the year normally sees more wells completed because of better weather than in the first two months of the year. The recent crude price advance will stimulate drilling operations.

Furthermore, drilling operations will not be hindered by a steel shortage as in the last half of 1952. In addition, WORLD OIL's forecast is based on the drilling plans of numerous companies. These confidential company programs reflected an overall gain in drilling.

In view of the foregoing favorable conditions, WORLD OIL's forecast for the completion of 24,851 wells during the last six months of 1953 does not seem unreasonable. Only 22,789 wells were completed during the second half of 1952 due to the industry being plagued by materials shortage because of the steel strike. However, 25,146 wells were completed the last six months of 1951.

Footage to Rise. Record footage is forecast because of the large increase anticipated in number of wells. Slightly less footage actually was drilled during the first six months of this year, the 93,878,488 feet drilled constituting a loss of 1.7 percent from the 95,500,783 feet represented by wells completed during the first half of 1952.

However, the large number of completions expected during the remainder of 1953 should boost total footage for the year to an all-time high, although the average depth per well

likely will be less than in the preceding year. A larger portion of the nation's drilling currently is taking place in shallower regions than in 1952, hence an average depth per well of only 4007 feet is anticipated in contrast with 4062 feet during 1952.

Drilling Breakdown. Oklahoma is expected to show a big increase. The forecast is for the completion of 6875 wells during 1953, which would be 20.9 percent more than the 5685 wells during last year. The state is well on its way to this volume of drilling, its 3487 completions during the first half of the year being 20.6 percent greater than during the similar period of 1952. Approximately the same level of drilling would see the state reach the estimate for the year.

A forecast of 4755 new wells for Kansas in 1953 represents an increase of 13.7 percent from the 4182 completed last year. During the first half of 1953, the state finished drilling 2357 wells, a gain of 8.1 percent. About the same number of completions are forecast for the second half of the year.

Completion of 2630 wells is forecast for California, up 7.0 percent from the 2459 drilled in 1952. There were 1299 wells completed in the state during the first half of the year, and a greater number is indicated during the remainder of the year.

New Mexico is expected to drill 1420 wells, up 30.8 percent from the 1086 drilled last year. Completions during the first six months of year totaled 698, so relatively little increase will be needed to reach this figure.

Louisiana's completions are likely to reach 2565 wells in 1953, a gain of 7.1 percent over 1952. The increase will be due to the completion of an estimated 1390 wells in South Louisiana, compared with 1086 a year ago. North Louisiana activity seems designed to drop from its 1952 volume.

A much higher drilling volume than that forecast would be achieved were it not for anticipating decreased operations in Texas. Only 16,910 wells are predicted for Texas in 1953, a 2.8 percent drop from the 17,395 during 1952. Despite this decline, the state remains the leading drilling locale in the nation. The forecast for Texas accounts for 35 percent of the nation's total.

Several areas in Texas are due to experience enlarged drilling. The decrease is due to a big drop in West Texas, which, nevertheless, remains a leading area with an estimated 3620 completions against 5125 during 1952.

Operations in North Texas (Districts 7-B and 9) are seen as totaling 6860 wells, approximately the same number as in Oklahoma. This will represent a 16.2 percent gain over the 5904 wells completed last year.

The Lower Gulf Coast region (District 4) is another spot where drilling is likely to exceed the 1952 volume. The forecast is for drilling of 1875 wells against 1611.

Footage in Texas is expected to total 76,995,580 feet for 1953, a loss of 7.6 percent from the 1952 figure. Nevertheless, Texas would account for nearly 40 percent of the footage drilled in the nation.

See Table Next Page

Indicated Number of Wells and Footage to Be Drilled in 1953

Forecast covers all new wells to be drilled for oil or gas in 1953, salt-water disposal wells, and water or gas-input wells for repressuring and secondary recovery, but does not estimate old wells drilled deeper.

STATE or DISTRICT	TOTAL NEW WELLS			WILDCAT TESTS		FOOTAGE—(New Wells)			
	Forecast For 1953	Drilled In 1952	Percent Change From 1952	Forecast For 1953	Percent of New Wells In 1953	Forecast For 1953	Drilled In 1952	Percent Change From From 1952	Percent of U.S. Total 1953
Alabama	98	75	+ 30.7	72	73.5	513,200	457,085	+ 12.3	0.26
Arizona	12	2	+ 500.0	12	100.0	37,050	10,755	+244.5	0.02
Arkansas	430	432	— 0.5	123	28.6	1,531,650	1,615,666	— 5.2	0.80
California	2,630	2,459	+ 7.0	465	17.7	11,227,450	10,512,469	+ 6.8	5.81
Colorado	640	483	+ 32.5	355	55.5	3,117,450	2,566,803	+ 21.5	1.62
Florida	36	9	+ 300.0	36	100.0	190,350	55,813	+241.0	0.10
Georgia	7	.....	.....	7	100.0	18,250	.....	.....	0.01
Illinois	2,125	2,089	+ 1.7	520	24.5	5,423,000	5,183,931	+ 4.6	2.81
Indiana	1,320	1,346	— 1.9	380	28.8	2,337,700	2,416,511	— 3.3	1.21
Kansas	4,755	4,182	+ 13.7	1,085	22.8	16,438,050	14,511,612	+ 13.3	8.52
Kentucky	1,175	1,423	— 17.4	140	11.9	2,340,600	2,743,044	— 14.7	1.21
Louisiana	2,565	2,395	+ 7.1	440	17.2	17,835,300	15,862,476	+ 12.4	9.25
North Louisiana	1,175	1,309	— 10.2	205	17.4	4,275,850	5,025,892	— 14.9	2.22
South Louisiana	1,390	1,086	+ 28.0	235	16.9	13,559,450	10,836,584	+ 25.1	7.03
Maryland	8	34	— 76.5	2	25.0	32,800	136,053	— 75.9	0.01
Michigan	570	643	— 11.4	250	43.9	1,540,700	1,740,515	— 11.5	0.80
Mississippi	380	346	+ 9.8	220	57.9	2,609,100	2,492,239	+ 4.7	1.35
Missouri	30	30	.....	15	50.0	28,900	30,600	— 5.6	0.02
Montana	405	324	+ 25.0	95	23.5	1,818,050	1,153,174	+ 57.7	0.94
Nebraska	385	247	+ 55.9	215	55.8	2,010,450	1,239,819	+ 62.2	1.04
New Mexico	1,420	1,086	+ 30.8	175	12.3	8,001,700	6,047,801	+ 32.3	4.15
New York	970	1,077	— 9.9	.....	.....	1,356,050	1,494,239	— 9.3	0.70
North Dakota	270	96	+ 181.3	65	24.1	2,145,700	805,049	+166.5	1.11
Ohio	990	983	+ 0.7	25	2.5	2,080,000	2,128,457	— 2.3	1.08
Oklahoma	6,875	5,685	+ 20.9	865	12.6	24,399,400	21,449,783	+ 13.8	12.65
Pennsylvania	1,640	1,683	— 2.6	4	0.2	2,861,800	2,851,127	+ 0.4	1.48
South Dakota	11	7	+ 57.1	11	100.0	56,100	25,954	+116.2	2.03
Tennessee	40	40	.....	33	82.5	49,600	49,600	.....	0.03
Texas	16,910	17,395	— 2.8	4,652	27.5	76,995,580	83,330,126	— 7.6	39.90
Dist. 1—South Central	785	780	+ 0.6	325	41.4	2,552,800	2,313,624	+ 10.3	1.32
Dist. 2—Middle Gulf	815	816	— 0.1	335	41.1	4,978,000	5,185,153	— 4.0	2.58
Dist. 3—Upper Gulf	1,705	1,743	— 2.2	418	24.5	11,435,450	11,611,731	— 1.5	5.93
Dist. 4—Lower Gulf-S. W.	1,875	1,611	+ 16.4	563	30.0	10,711,900	8,658,565	+ 23.7	5.55
Dists. 5 and 6—East Central and Northeast	805	854	— 5.7	291	36.1	4,059,600	4,821,480	— 15.8	2.10
Dists. 7-B and 9—North Central and North	6,860	5,904	+ 16.2	1,605	23.4	22,418,480	18,908,345	+ 18.6	11.62
Dists. 7-C and 8—West Central and West	3,620	5,125	— 29.4	1,075	29.7	19,490,100	30,046,661	— 35.1	10.10
Dist. 10—Panhandle	445	562	— 20.8	40	9.1	1,349,250	1,784,567	— 24.4	0.70
Utah	75	77	— 2.6	52	69.3	450,075	498,262	— 9.7	0.23
West Virginia	635	582	+ 9.1	4	0.6	1,781,200	1,693,129	+ 5.2	0.93
Wyoming	735	654	+ 12.4	137	18.6	3,669,900	3,276,588	+ 12.0	1.90
Other States[1]	13	1	+1200.0	13	100.0	52,600	11,543	+355.7	0.03
United States Total	48,155	45,885	+ 4.9	10,468	21.7	192,949,755	186,390,223	+ 3.5	100.00

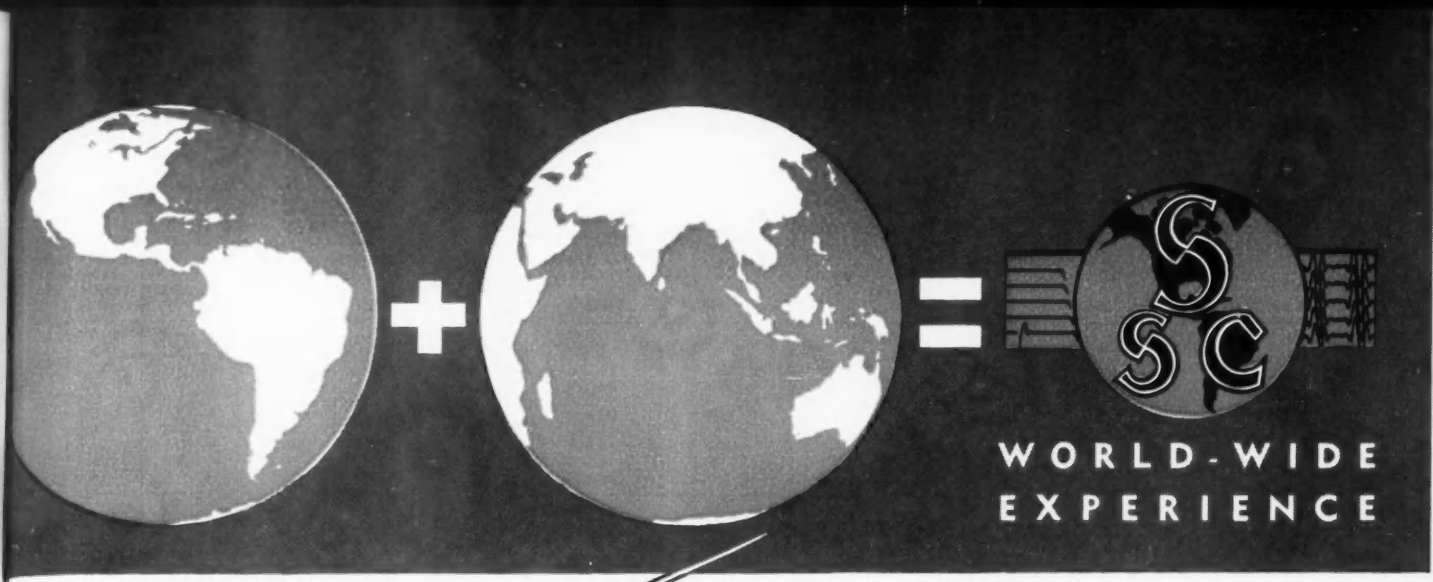
[1] Idaho, Nevada and Washington.

Footage and Average Depths Drilled in All Wells in the United States First Half of 1953

STATE or DISTRICT	OIL			DISTILLATE			GAS			DRY			WATER INPUT			GAS INPUT		
	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth	Wells	Footage	Avge. Depth
Alabama	10	58,023	5802							39	198,597	5092						
Arizona										5	15,437	3087						
Arkansas	96	342,755	3570				6	16,518	2753	103	370,934	3601						
California	960	4,101,534	4272				18	60,100	3339	321	1,384,325	4313						
Colorado	84	441,729	5259				38	137,845	3628	166	823,410	4960						
Florida										18	95,165	5287						
Georgia										3	7,808	2603						
Illinois	400	1,067,287	2668				2	3,578	1789	481	1,120,757	2330						
Indiana	223	404,522	1814				17	19,259	1133	343	609,463	1777	1	1,060	1060			
Kansas	1,084	3,709,680	3422				216	636,171	2945	1,029	3,697,976	3594						
Kentucky	200	346,122	1731				91	218,159	2397	237	487,509	2057	2	4,345	2173			
Louisiana	600	3,935,597	6559	39	430,027	11026	111	899,070	8100	427	3,165,260	7413						
North Lousiana	253	688,587	2722	8	68,773	8597	45	201,208	4471	195	864,322	4432						
South Louisiana	347	3,247,010	9357	31	361,254	11653	66	697,862	10574	232	2,300,938	9918						
Maryland										2	8,198	4099						
Michigan	99	307,361	3105				11	23,195	2109	160	399,132	2495						
Mississippi	44	302,967	6886	5	34,679	6936	5	26,912	5382	129	891,987	6915						
Missouri	2	938	469							11	11,583	1053						
Montana	97	422,869	4359				8	19,528	2441	86	414,918	4825						
Nebraska	67	374,776	5594				5	24,233	4847	92	457,464	4972						
New Mexico	284	2,053,310	7230				286	1,172,077	4098	127	707,204	5569	1	749	749			
New York	259	360,313	1391										171	240,881	1409			
North Dakota	88	731,235	8309							30	206,560	6885						
Ohio	215	449,828	2092				84	208,058	2477	172	331,688	1928						
Oklahoma	2,098	7,629,356	3636	7	48,268	6895	163	566,678	3477	1,189	4,059,587	3414	14	33,760	2411	2	4,930	2465
Pennsylvania	344	554,348	1611				65	173,502	2669	21	72,364	3446	309	495,327	1603	40	64,120	1603
South Dakota										5	25,499	5100						
Tennessee																		
Texas	4,484	20,090,550	4480	112	924,533	8255	400	2,298,075	5745	3,384	14,773,543	4366	17	33,046	1944	4	23,443	5861
Dist. 1 South Central	203	612,446	3017	6	48,446	8074	4	23,424	5856	207	681,540	3292						
Dist. 2 Middle Gulf	136	847,699	6233	25	198,957	7958	53	293,906	5545	187	1,108,753	5929						
Dist. 3 Upper Gulf	385	2,325,645	6041	40	360,587	9015	51	383,364	7517	341	2,409,774	7067						
Dist. 4 Lower Gulf-S.W	433	2,388,178	5515	27	211,875	7847	119	826,239	6943	349	1,880,053	5387				1	9,600	9600
Dist. 5 & 6 East Central and Northeast	118	585,806	4964	6	44,179	7363	51	346,881	6802	223	1,029,531	4617						
Dist. 7-B & 9 North Central and North	1,797	5,923,879	3297	2	9,149	4575	26	96,101	3696	1,558	5,053,675	3244	17	33,046	1944	2	8,353	4177
Dist. 7-C & 8 West Central and West	1,271	6,963,999	5479	6	51,340	8557	13	94,859	7297	510	2,577,076	5053				1	5,490	5490
Dist. 10 Panhandle	141	442,898	3141				83	230,301	2775	9	33,141	3682						
Utah	10	72,999	7300				2	10,120	5060	30	168,920	5631						
West Virginia	35	69,404	1983				203	599,509	2953	67	186,540	2784						
Wyoming	223	1,092,981	4901				4	13,959	3490	101	530,736	5255						
Other States*										8	28,538	3567						
Total United States	12,006	48,920,484	4075	163	1,437,507	8819	1,735	7,126,546	4108	8,786	35,251,102	4012	515	809,168	1571	46	92,493	2011

STATE or DISTRICT	SALT WATER DISPOSAL			TOTAL NEW WELLS								WILDCAT WELLS		
				First Half 1953			First Half 1952			Forecast Second Half 1953		Forecast Second Half 1953	Drilled First Half 1953	Drilled Second Half 1952
	Wells	Footage	Average Depth	Wells	Footage	Average Depth	Wells	Footage	Average Depth	Wells	Footage			
Alabama				49	256,620	5237	28	152,932	5462	49	256,580	37	35	21
Arizona				5	15,437	3087	1	3,544	3544	7	21,613	7	5	1
Arkansas	1	3,651	3651	206	733,858	3562	192	708,097	3688	224	797,792	65	58	80
California				1,299	5,545,959	4269	1,269	5,353,086	4218	1,331	5,681,491	238	227	242
Colorado				288	1,402,984	4871	193	1,052,790	5455	352	1,714,466	197	158	169
Florida				18	95,165	5287	4	27,224	6806	18	95,185	18	18	5
Georgia				3	7,808	2603				4	10,442	4	3	
Illinois				883	2,191,622	2482	852	2,065,702	2425	1,242	3,231,378	308	212	360
Indiana	1	1,860	1860	585	1,036,164	1771	583	1,028,245	1764	735	1,301,536	212	168	212
Kansas	28	105,132	3755	2,357	8,148,959	3457	2,181	7,560,746	3467	2,398	8,289,091	548	537	550
Kentucky	1	1,855	1855	531	1,057,990	1992	581	1,199,504	2065	644	1,282,610	77	63	91
Louisiana	2	20,520	10260	1,179	8,450,474	7167	1,124	7,649,127	6805	1,386	9,384,826	242	198	254
North Louisiana				501	1,822,890	3639	597	2,232,780	3740	674	2,452,960	118	87	154
South Louisiana	2	20,520	10260	678	6,627,584	9775	527	5,416,347	10278	712	6,931,866	124	111	100
Maryland				2	8,198	4099	23	91,829	3993	6	24,602	2		
Michigan				270	729,688	2703	307	823,382	2682	300	811,012	134	116	136
Mississippi				183	1,256,545	6866	175	1,258,551	7192	197	1,352,555	115	105	92
Missouri				13	12,521	963	18	21,893	1216	17	16,379	8	7	6
Montana				191	857,315	4489	110	327,147	2974	214	960,735	53	42	71
Nebraska				164	856,473	5222	88	437,354	4970	221	1,153,977	127	88	83
New Mexico				698	3,933,340	5635	576	3,098,020	5379	722	4,068,360	92	83	75
New York				430	601,194	1398	461	642,533	1394	540	754,856			
North Dakota				118	937,795	7947	26	242,678	9334	152	1,207,905	41	24	19
Ohio				471	989,574	2101	476	1,033,269	2171	519	1,090,426	15	10	15
Oklahoma	14	34,023	2430	3,487	12,376,602	3549	2,891	10,936,968	3783	3,388	12,022,798	430	435	460
Pennsylvania				779	1,359,661	1745	822	1,399,499	1703	861	1,502,139	4		
South Dakota				5	25,499	5100	1	8,433	8433	6	30,601	6	5	6
Tennessee										40	49,600	33		15
Texas	6	12,191	2032	8,407	38,155,381	4539	9,503	45,859,260	4826	8,503	38,840,199	2,254	2,398	2,297
Dist. 1 South Central				420	1,365,856	3252	356	1,075,908	3022	365	1,186,944	151	174	187
Dist. 2 Middle Gulf				401	2,449,315	6108	429	2,679,908	6247	414	2,528,685	170	165	177
Dist. 3 Upper Gulf				817	5,479,370	6707	945	6,221,210	6583	888	5,956,080	218	200	191
Dist. 4 Lower Gulf	2	3,040	1520	931	5,318,985	5713	877	4,509,594	5142	944	5,293,915	284	279	223
Dist. 5 & 6 East Central and Northeast	1	5,600	5600	399	2,011,997	5043	476	2,775,189	5830	406	2,047,603	147	144	141
Dist. 7-B & 9 North Central and North	3	3,551	1184	3,405	11,127,754	3268	3,070	9,783,921	3187	3,455	11,290,726	593	1,012	947
Dist. 7-C & 8 West Central and West				1,801	9,695,764	5384	3,007	17,729,292	5896	1,819	9,794,336	653	422	426
Dist. 10 Panhandle				233	706,340	3032	343	1,084,238	3161	212	642,910	38	2	5
Utah				42	252,039	6001	24	151,783	6324	33	198,036	23	29	34
West Virginia				305	855,453	2805	305	911,615	2989	330	925,747	4		
Wyoming				328	1,637,676	4993	282	1,455,572	5162	407	2,032,224	76	61	121
Other States*				8	28,538	3567				5	24,062	5	8	1
Total United States	53	179,232	3382	23,304	93,816,532	4026	23,096	95,500,783	4135	24,851	99,133,223	5,375	5,093	5,416

* Idaho, Nevada and Washington.



"IT'S BASIC . . ."

says

PROFESSOR

Doodlebug, S. S. C.

Experience, especially of a World-Wide scope, is basic . . . and SSC has it—more than 500 crew years of experience since the company was organized in 1931.

Today SSC's more than sixty SEISMIC, GRAVITY and LORAC crews are operating on all continents.

World-wide Experience

Seismograph Service Corporation

Seismic Surveys — Gravity Surveys — Pilot Crews — Lorac

TULSA 1, OKLAHOMA, U.S.A.

U. S. Crude Production, by States and Districts, June and First Half of Year, 1952 and 1953

From U. S. Bureau of Mines, except May and June, 1953, from A.P.I. weekly reports, and breakdown of Texas by districts from A.P.I.

(Thousands of Barrels)

STATE or DISTRICT	PRODUCTION IN JUNE					PRODUCTION DURING FIRST HALF OF YEAR					
	Monthly Total			Daily Average		Six Months' Total		Daily Average			
	1952	1953	Percent Diff.	1952	1953	1952	1953	1952	1953	Percent Diff.	Half Year's Prod. In 1953 as % of U.S.
Alabama	70	150	+114.3	2.3	5.0	460	858	2.5	4.8	+ 88.0	0.07
Arkansas	2,360	2,335	— 1.1	78.7	77.8	14,697	14,494	80.8	80.1	— 1.5	1.23
California	29,592	30,415	+ 2.8	986.4	1,013.8	178,382	180,714	980.1	998.4	+ 1.3	15.40
Colorado	2,349	3,104	+ 32.1	78.3	103.5	14,026	15,924	77.1	88.0	+ 13.5	1.36
Florida	50	45	— 10.0	1.7	1.5	310	268	1.7	1.5	— 11.8	0.02
Illinois	4,787	4,888	+ 2.1	159.6	162.9	28,623	29,233	157.3	161.5	+ 2.1	2.49
Indiana	1,060	1,072	+ 1.1	35.3	35.7	5,750	6,513	31.6	36.0	+ 13.3	0.56
Kansas	9,218	9,495	+ 3.0	307.2	316.5	53,898	59,757	296.1	330.2	+ 10.9	5.09
Kentucky	1,000	910	— 9.0	33.3	30.3	6,309	5,507	34.7	30.4	— 12.7	0.47
Louisiana	19,926	21,044	+ 5.6	664.2	701.5	116,833	127,894	641.9	706.6	+ 9.5	10.90
North Louisiana	3,440	3,402	— 1.1	114.7	113.4	21,499	21,024	118.1	116.2	— 2.2	1.79
South Louisiana	16,486	17,642	+ 7.0	549.5	588.1	95,334	106,870	523.8	590.4	+ 12.1	9.11
Michigan	1,121	1,013	— 9.6	37.4	33.8	6,759	6,168	37.1	34.1	— 8.1	0.53
Mississippi	2,962	2,939	— 0.8	98.7	98.0	18,162	17,948	99.8	99.2	— 1.2	1.53
Missouri	2	1	— 50.0	0.1	0.1	12	9				
Montana	654	1,044	+ 59.6	21.8	34.8	4,298	5,674	23.6	31.3	+ 32.2	0.48
Nebraska	180	411	+128.3	6.0	13.7	960	2,655	5.3	14.7	+175.5	0.23
New Mexico	5,188	5,798	+ 11.8	173.0	193.2	27,663	33,711	152.0	186.2	+ 21.8	2.87
New York	355	373	+ 5.1	11.8	12.5	2,139	2,061	11.8	11.4	— 4.2	0.17
North Dakota	87	359	+312.6	2.9	12.0	205	2,585	1.1	14.3	+1190.9	0.22
Ohio	272	302	+ 11.0	9.1	10.1	1,567	1,684	8.6	9.3	+ 9.3	0.15
Oklahoma	16,129	16,026	— 0.6	537.6	534.2	93,435	99,327	513.4	548.8	+ 6.3	8.46
Pennsylvania	941	824	— 12.4	31.4	27.5	5,651	5,242	31.1	29.0	— 7.4	0.45
Tennessee		1				5	6				
*Texas	81,778	84,146	+ 2.9	2,725.9	2,804.8	498,085	513,677	2,736.7	2,838.0	+ 3.1	43.77
Dist. 1: South Central	954	1,103	+ 15.6	31.8	36.8	5,982	6,574	32.9	36.3	+ 9.7	0.56
Dist. 2: Middle Gulf	4,416	4,783	+ 8.3	147.2	159.4	28,630	28,823	157.3	159.2	+ 0.7	2.46
Dist. 3: Upper Gulf	13,838	14,077	+ 1.7	461.3	469.2	84,816	86,631	466.0	478.6	+ 2.1	7.38
Dist. 4: Lwr Gulf-S.W.	7,227	7,940	+ 9.9	240.9	264.7	46,750	47,049	256.9	259.9	+ 0.6	4.01
Dist. 5: East Central	1,626	1,473	— 9.4	54.2	49.1	10,483	8,965	57.6	49.5	— 14.4	0.76
Dist. 6: Northeast	11,676	11,382	— 2.5	389.2	379.4	71,196	69,093	391.2	381.7	— 3.0	5.89
Dist. 7-B: N. Central	2,774	3,475	+ 25.3	92.5	115.8	15,647	19,777	86.0	109.3	+ 26.4	1.69
Dist. 7-C: W. Central	4,135	4,972	+ 20.2	137.8	165.7	24,306	29,969	133.5	165.6	+ 23.4	2.55
Dist. 8: West	26,855	27,343	+ 1.8	895.2	911.4	167,753	166,340	921.7	919.0	— 0.9	14.17
Dist. 9: North	4,886	5,343	+ 9.4	162.9	178.1	28,478	32,460	156.5	179.3	+ 13.9	2.77
Dist. 10: Panhandle	2,488	2,255	— 9.4	82.9	75.1	14,912	13,534	81.9	74.8	— 9.2	1.15
Utah	151	157	+ 4.0	5.0	5.2	786	966	4.3	5.3	+ 23.3	0.09
Virginia	1	3	+200.0			5	9				
West Virginia	208	241	+ 15.9	6.9	8.0	1,292	1,361	7.1	7.5	+ 5.6	0.11
Wyoming	5,476	6,737	+ 23.0	182.6	224.6	32,191	39,217	176.9	216.7	+ 21.8	3.35
Total United States	185,917	193,833	+ 4.3	6,197.2	6,461.0	1,112,503	1,173,462	6,112.7	6,483.3	+ 6.1	100.00

* Data for Texas in first half of year by districts are from A.P.I. and do not agree exactly with Texas total, which is from Bureau of Mines for first four months

U. S. Crude Production at New High

Daily average output in first half of 1953 is 6.1 percent above same period in 1952.

U. S. PRODUCERS of crude oil had unprecedented market for their oil in the first half of 1953. They produced 6,483,300 barrels per day for the period, an average 6.1 percent above that of 6,112,700 daily for the first six months of 1952. This production was largely justified by market demand, as stocks of crude were increased only 10 million barrels between January 1 and June 30 this year. The gain in production occurred in spite of rather large increases in imports of crude and products into the U. S. The increases in all sources of supply were essential because of a substantial further rise in U. S. demand for petroleum products.

Texas held down allowable production in order to keep supply in balance with market demand and produced only 3.1 percent more per day in the first half of 1953 than in the like period of 1952. North, North Central, West Central, and South Central Texas districts showed substantial increases, and districts on the Gulf Coast had nominal increases. But there were decreases in East Texas, West Texas, and the Panhandle. Despite the small increase over a year ago, Texas in this year's first half accounted for 43.77 percent of the U. S. total output. West Texas' Districts 7-C and 8 averaged 1,084,600 barrels daily in the 1953 first half and accounted for 16.72 percent of U. S. output. The Gulf Coast region's Districts 2, 3 and 4 together averaged 897,700 barrels daily, or 13.85 percent of the U. S. total.

California, the second largest producing state averaged 998,400 barrels daily, an increase of 1.3 percent over a year earlier, and 15.40 percent of the U. S. total.

Louisiana, No. 3 producing state, averaged 706,600 barrels daily, up 9.5 percent from a year previous, and 10.90 percent of the U. S. total. Oklahoma was fourth, with production of 548,800 barrels daily, an increase of 6.3 percent and 8.46 percent of the national total. Kansas averaged 330,200 barrels per day, up 10.9 percent from a year earlier and 5.09 percent of the U. S. total.

D-X

Giant Petroleum Product Values

For more than a quarter of a century, D-X petroleum products have been giving consumers higher quality, and at no extra cost. They are today's *giant* values.

D-X Motor Oil and D-X DHD Motor Oil contain Extrinol, the D-X "extra" that makes these motor oils tougher, safer and more economical to use.

D-X Lubricating Gasoline is the *different* gasoline that contains a special high heat-resisting lubricant, yet costs no more than ordinary gasoline.

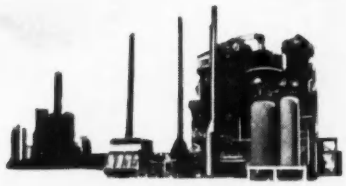
These D-X products and a complete line of fuels, oils, greases, lubricants and farm specialties are sold in the United States through more than 8,000 service station dealers, and in leading export markets throughout the world.

Gasolines
Diesel Fuels
Tractor Fuels
Motor Oils
Heavy Duty Oils
Aviation Oils

Blended Oils
Paraffin Oils
Transmission Oils
Industrial Oils
Automatic Transmission Fluids

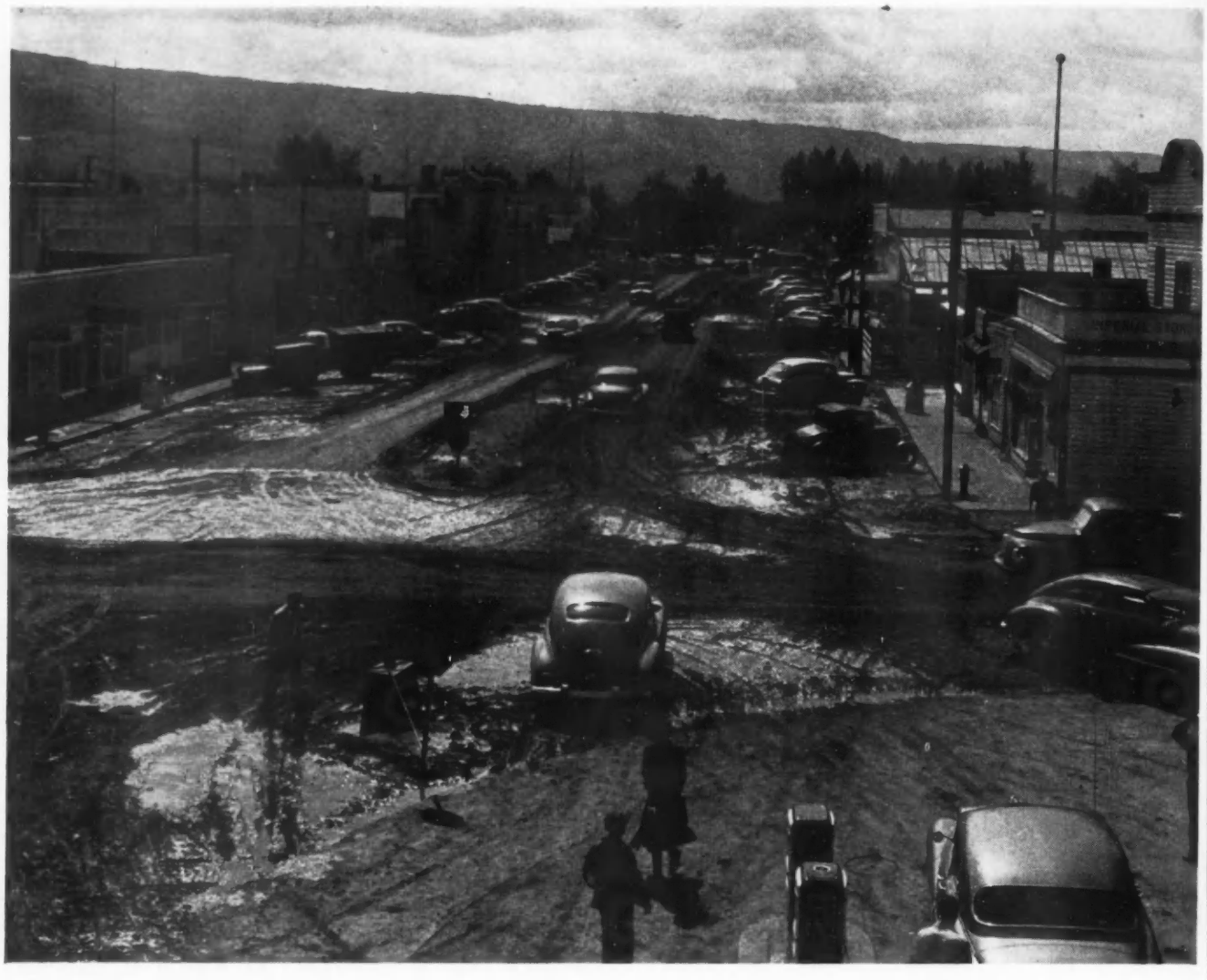
Solvent Bright Stocks and Neutrals
Conventional Bright Stocks and Neutrals
Automotive Lubricants

Heating Oils
Waxes
Petrolatums
Stock Sprays
Specialty Products



MID-CONTINENT PETROLEUM CORPORATION • TULSA, OKLAHOMA

Waterloo, Ia. Terre Haute, Ind. Omaha, Nebr. Chicago, Ill. Minneapolis, Minn.



Socony-Vacuum Oil Company Photo

MAIN STREET OF PEACE RIVER TOWN—the jumping off point for oil operations in northern Alberta.

Canada . . . continues in the spotlight as records of past years fall. Expenditures during 1952 amount to more than $250 million.

By GILBERT M. WILSON, WORLD OIL Staff

WESTERN CANADA during 1952 continued to hold the spotlight by breaking its own impressive records of previous years. The oil industry, during that year, discovered a new gas or oil field every other day and, according to estimates, will spend around a million dollars a day in further exploration and development during 1953. Expenditures for 1952 amounted to more than $250 million, an increase of about 25 percent from the 1951 record high for outlays in exploration and development activities.

New Discoveries made during 1952 numbered 179, an increase of 50 percent over the figure established during 1951. Of these new fields, Alberta accounted for the big share with 134; Saskatchewan was second with 30, followed by Manitoba with 4 and British Columbia with 11. Oil discoveries, amounting to 93 for the western provinces, accounted for the majority of the new finds, with wet gas accounting for 18 and dry gas accounting for another 68.

Drilling Record. During the year, 2084 wells, a new high, were drilled in Western Canada and represents the first time the figure has exceeded the 2000 mark. Of this total 1188 were completed as oil wells, 69 as gas wells and 827 indicated as dry.

Production Up. Western Canada during 1952, produced some 61 mil-

FOR THE DEEPEST DRILLING...

TITAN TORCAIR "66" RIG!

Completed and on location for the San Joaquin Drilling Company, in California, is the Wilson Super Titan Torcair "66" rig. This rig, believed to be the largest rotary drilling rig in the world, is rated to drill to 20,000 feet and can drill to greater depths provided pipe of sufficient strength is available.

Wilson's Super Titan is completely air operated by remote control from the master control panel, which may be placed at the most convenient position on the derrick floor. Wilson, being the *only manufacturer* of *all friction clutch* compound rigs, utilizes only one kind of clutch . . . the famous Wichita Air-Tube Disc Clutch.

The Super Titan drum barrel is 60" long, 31" diameter (including wire line grooving). Drum flanges are 66" diameter, brake rings 63" diameter, with 10" wide blocks. The drum clutches, believed to be the largest in the world, are 48" double plate Air-Tube Disc Clutch for low speed and 48" single plate Air-Tube Disc Clutch for High Speed. There are two friction clutch drum speeds plus two friction clutch transmission speeds, making a total of four speeds. With each engine being equipped with a Torcon 26D Torque Converter, there is a total speed range of 16 to 1 with infinite speed steps between these ratios. This rig is also equipped with a Parkersburg 60" Hydromatic Brake, which is the largest hydromatic brake built.

The brakes used on the Super Titan Torcair are controlled by air but are engaged by two powerful springs and disengaged by air pressure. Failure of the air for any reason causes the brakes to engage and stop the rig; therefore, these brakes are the safest type brakes known. They feed off perfectly from the remote control panel, with "feel," permitting the operator to tell when the brakes start to engage the drum and how much braking is being applied.

Among the numerous other features of this tremendous rig is the new arrangement of the dual pump drive, plus the piloted positive aligned clutch housing, which was developed by Wilson, to connect the engines and torque converters directly to the compound through the Wichita Air-Tube Disc Clutches.

Each feature designed for and constructed into the New Wilson Super Titan Torcair "66" Rig has been field proven to assure you not only the latest but the finest and most economical drilling rigs that money can buy. REMEMBER . . . YOU'LL BE YEARS AHEAD WITH WILSON . . . SO BE MODERN . . . BUY WILSON!

Pictured is the New Wilson Super Titan "66" on location near Ventura, California.

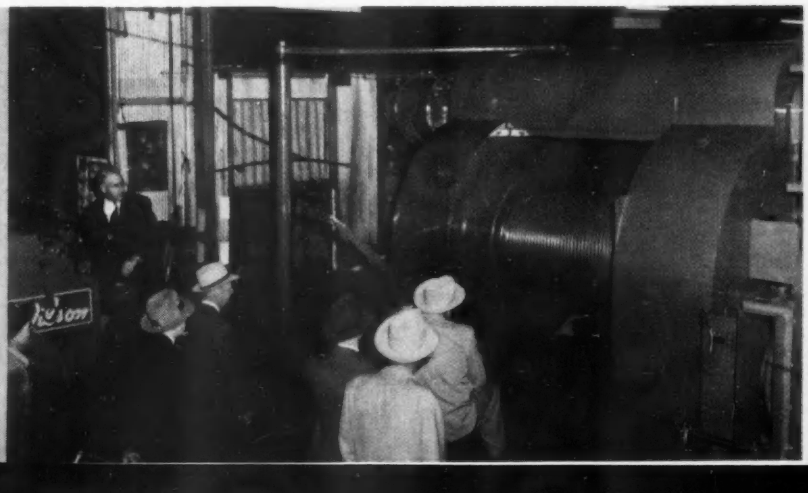
first name in Drilling Rigs — Wilson

WILSON MANUFACTURING COMPANY, INC.

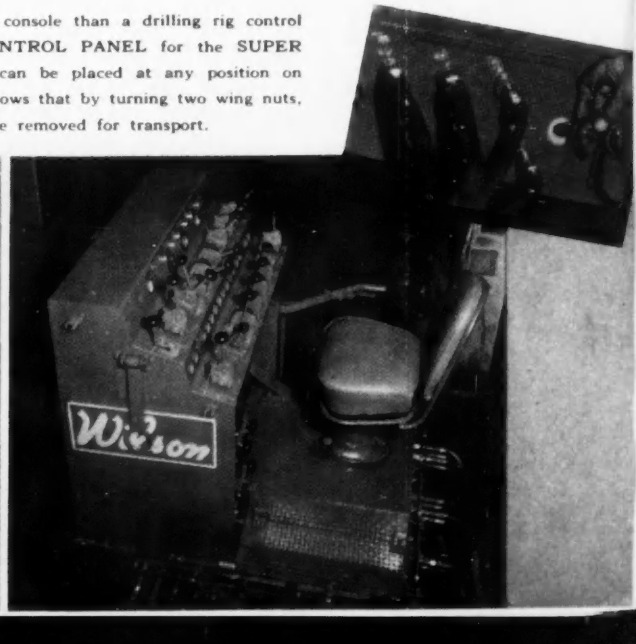
WICHITA FALLS, TEXAS, U. S. A.

WRITE FOR COMPLETE DETAILS ON THE SUPER TITAN TODAY!

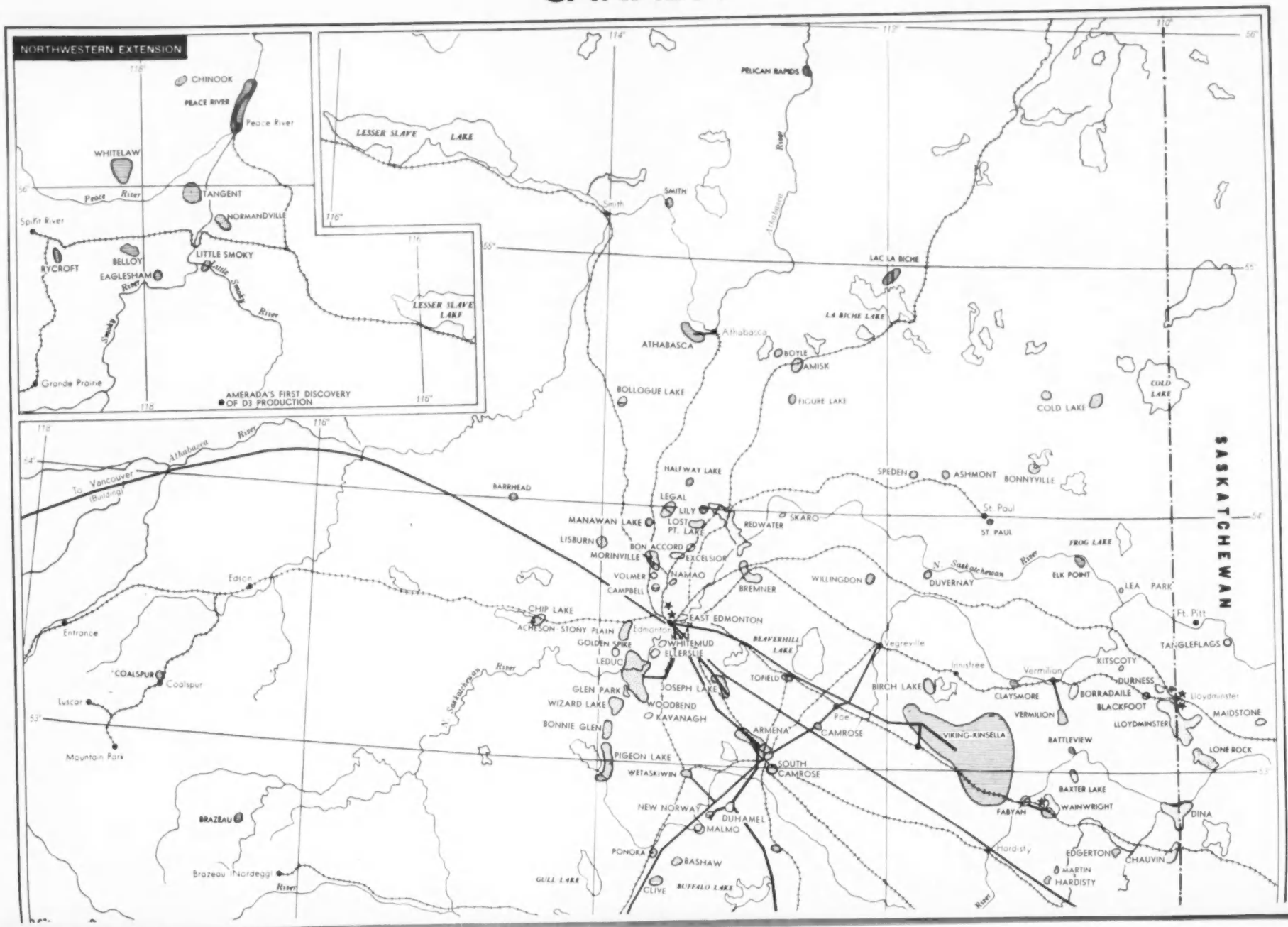
Another photo showing the immensity of the Wilson SUPER TITAN is this one in which a group of drilling contractors are watching the action of the brakes and the huge drum as Mr. John Wilson operates the controls from the remote control panel.

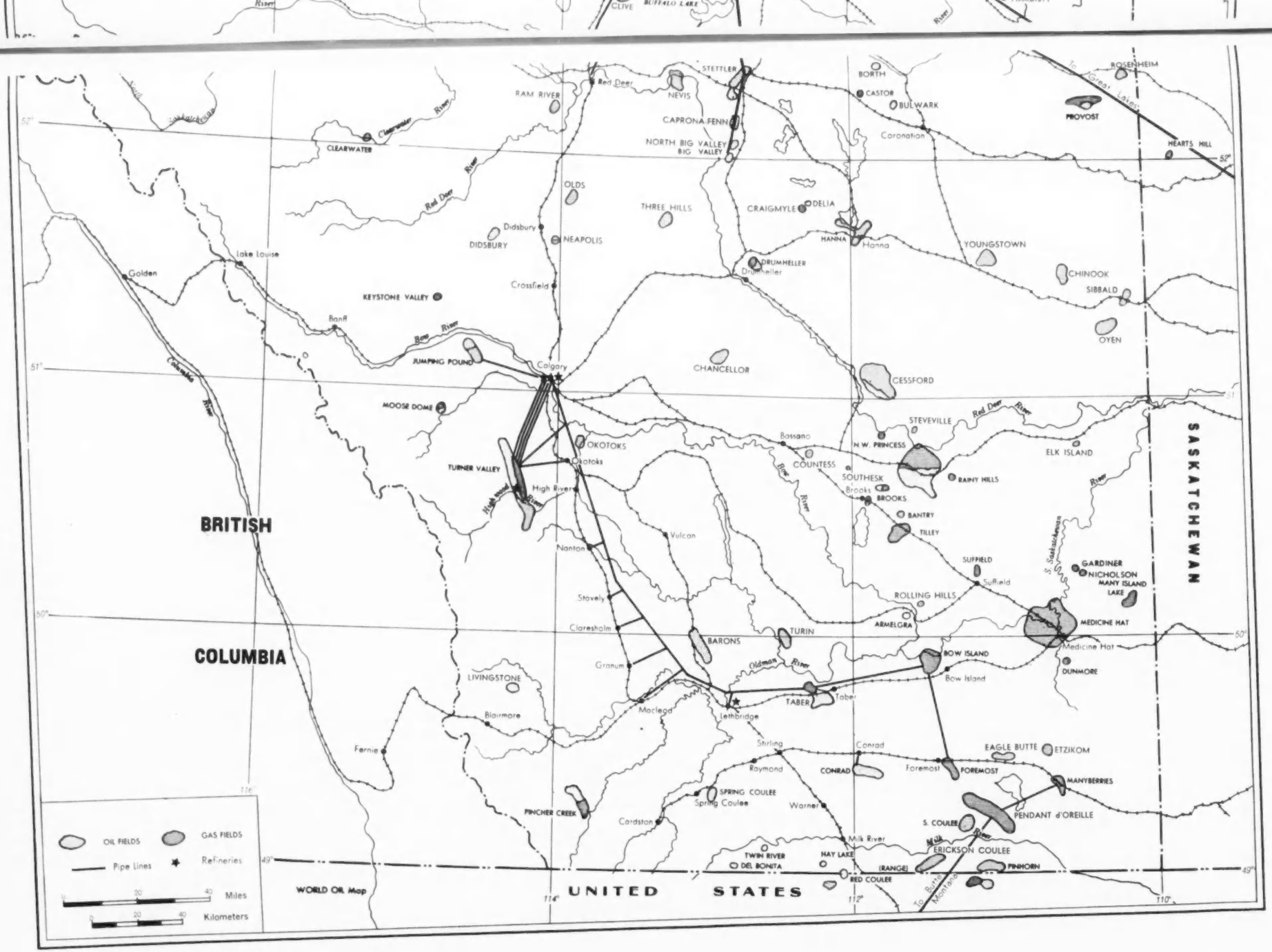


Looking more like an organ console than a drilling rig control panel is this REMOTE CONTROL PANEL for the SUPER TITAN. This control panel can be placed at any position on the derrick floor. The inset shows that by turning two wing nuts, each panel of air lines can be removed for transport.



CANADA


NORTHWESTERN EXTENSION
AMERADA'S FIRST DISCOVERY OF D3 PRODUCTION
CHINOOK
PEACE RIVER
Peace River
WHITELAW
TANGENT
NORMANDVILLE
Spirit River
RYCROFT
BELLOY
EAGLESHAM
LITTLE SMOKY
Little Smoky River
Smoky River
Peace River
Grande Prairie
LESSER SLAVE LAKE
PELICAN RAPIDS
SMITH
Athabasca River
LAC LA BICHE
LA BICHE LAKE
ATHABASCA
BOYLE
AMISK
BOLLOGUE LAKE
FIGURE LAKE
COLD LAKE
SASKATCHEWAN
HALFWAY LAKE
SPEDEN
ASHMONT
BONNYVILLE
BARRHEAD
LEGAL
LILY
LOST PT. LAKE
REDWATER
SKARO
ST. PAUL
MANAWAN LAKE
LISBURN
BON ACCORD
MORINVILLE
EXCELSIOR
FROG LAKE
N. Saskatchewan River
ELK POINT
VOLMER
NAMAO
CAMPBELL
BREMNER
WILLINGDON
DUVERNAY
LEA PARK
Edson
CHIP LAKE
ACHESON
STONY PLAIN
EAST EDMONTON
Edmonton
Ft. Pitt
TANGLEFLAGS
Entrance
GOLDEN SPIKE
WHITEMUD
LEDUC
ELTERSLIE
BEAVERHILL LAKE
Vegreville
KITSCOTY
COALSPUR
Coalspur
TOFIELD
Innisfree
Vermilion
DURNESS
BIRCH LAKE
CLAYSMORE
BORRADAILE
Lloydminster
Luscar
GLEN PARK
JOSEPH LAKE
BLACKFOOT
WIZARD LAKE
WOODBEND
KAVANAGH
VERMILION
LLOYDMINSTER
MAIDSTOCK
BONNIE GLEN
ARMENA
Poe
CAMROSE
VIKING-KINSELLA
BATTLEVIEW
Mountain Park
PIGEON LAKE
SOUTH CAMROSE
LONE ROCK
WETASKIWIN
BAXTER LAKE
NEW NORWAY
DUHAMEL
MALMO
FABYAN
WAINWRIGHT
DINA
BRAZEAU
Hardisty
EDGERTON
CHAUVIN
PONOKA
BASHAW
MARTIN
HARDISTY
Brazeau (Nordegg)
GULL LAKE
CLIVE
BUFFALO LAKE
To Vancouver (Building)


BRITISH
COLUMBIA
SASKATCHEWAN
UNITED STATES
STETTLER
BORTH
CASTOR
BULWARK
ROSENHEIM
PROVOST
Coronation
HEARTS HILL
RAM RIVER
Red Deer
NEVIS
CAPRONA FENN
NORTH BIG VALLEY
BIG VALLEY
CLEARWATER
Clearwater River
Saskatchewan
Red Deer River
OLDS
THREE HILLS
CRAIGMYLE
DELIA
HANNA
Hanna
YOUNGSTOWN
Didsbury
DIDSBURY
NEAPOLIS
DRUMHELLER
Drumheller
CHINOOK
SIBBALD
Lake Louise
Golden
KEYSTONE VALLEY
Crossfield
Banff
Bow River
OYEN
JUMPING POUND
Calgary
CHANCELLOR
CESSFORD
MOOSE DOME
STEVEVILLE
Red Deer River
Bassano
OKOTOKS
Okotoks
N.W. PRINCESS
ELK ISLAND
TURNER VALLEY
COUNTESS
SOUTHESK
RAINY HILLS
High River
Brooks
BROOKS
BANTRY
TILLEY
Blue River
Vulcan
Nanton
SUFFIELD
Suffield
GARDINER
NICHOLSON
MANY ISLAND LAKE
ROLLING HILLS
Stavely
ARMELGRA
MEDICINE HAT
Medicine Hat
Claresholm
TURIN
BARONS
BOW ISLAND
Bow Island
DUNMORE
Oldman River
Granum
LIVINGSTONE
TABER
Taber
Macleod
Lethbridge
Blairmore
Fernie
Stirling
Conrad
EAGLE BUTTE
ETZIKOM
Raymond
CONRAD
Foremost
FOREMOST
MANYBERRIES
SPRING COULEE
Spring Coulee
Warner
PINCHER CREEK
Cardston
S. COULEE
PENDANT d'OREILLE
Milk River
ERICKSON COULEE
TWIN RIVER
DEL BONITA
HAY LAKE
(RANGE)
RED COULEE
PINHORN
To Butte, Montana
OIL FIELDS
GAS FIELDS
Pipe Lines
Refineries
Miles
Kilometers
WORLD OIL Map

lion barrels of crude oil, 30 percent more than the volume produced in 1951.

Reserves Climb. Western Canada provinces during 1952 added another 400 million barrels to their steadily climbing reserves. Estimates of total reserves, as of the end of 1952, now range from around 1.7 to as high as 2 billion barrels. Productive capacity, although presently curtailed, is estimated to be in the order of 300,000 barrels per day.

Gas reserves of Western Canada continued to show a rapid increase and pressure was growing among producers and other advocates of gas exporting to other provinces as well as to the United States, to authorize construction of pipe line outlets from the principal gas areas in Alberta and Saskatchewan. Estimates of new gas reserves added during 1952 range from 3 to 4 billion cubic feet, bringing total reserves now proved to around 10 trillion cubic feet.

Authorization already has been granted, by both Alberta and the Federal Government, to export Peace River region gas (both sides of B. C.-Alberta border) to the Pacific Northwest area; actual construction of a pipe line awaiting only the approval of the U. S. Federal Power Commission to allow importing into the Washington-Oregon area.

Demand Up. Canadian demand for crude oil increased, during 1952, to 455,000 barrels daily. Actual production during the year amounted to an average of 169,000 barrels, representing about 37 percent of demand.

This represents a tremendous increase over the 222,000 barrels demand that existed in Canada in 1946, before Leduc, and at which time the country's own production supplied only slightly over 9 percent of the demand. Some authorities estimate it is possible that Canada may become self-sufficient in petroleum within the next five years.

Total drilling rigs in Western Canada numbered 275, with about 253 of them operating during the peak month in the summer. Of these, 102 were working on wildcats and 151 on development wells. By provinces, the drilling rig total showed Alberta in the lead with 209 rigs working, Saskatchewan second with 31, British Columbia in third place with 7, followed by Manitoba with 6 units.

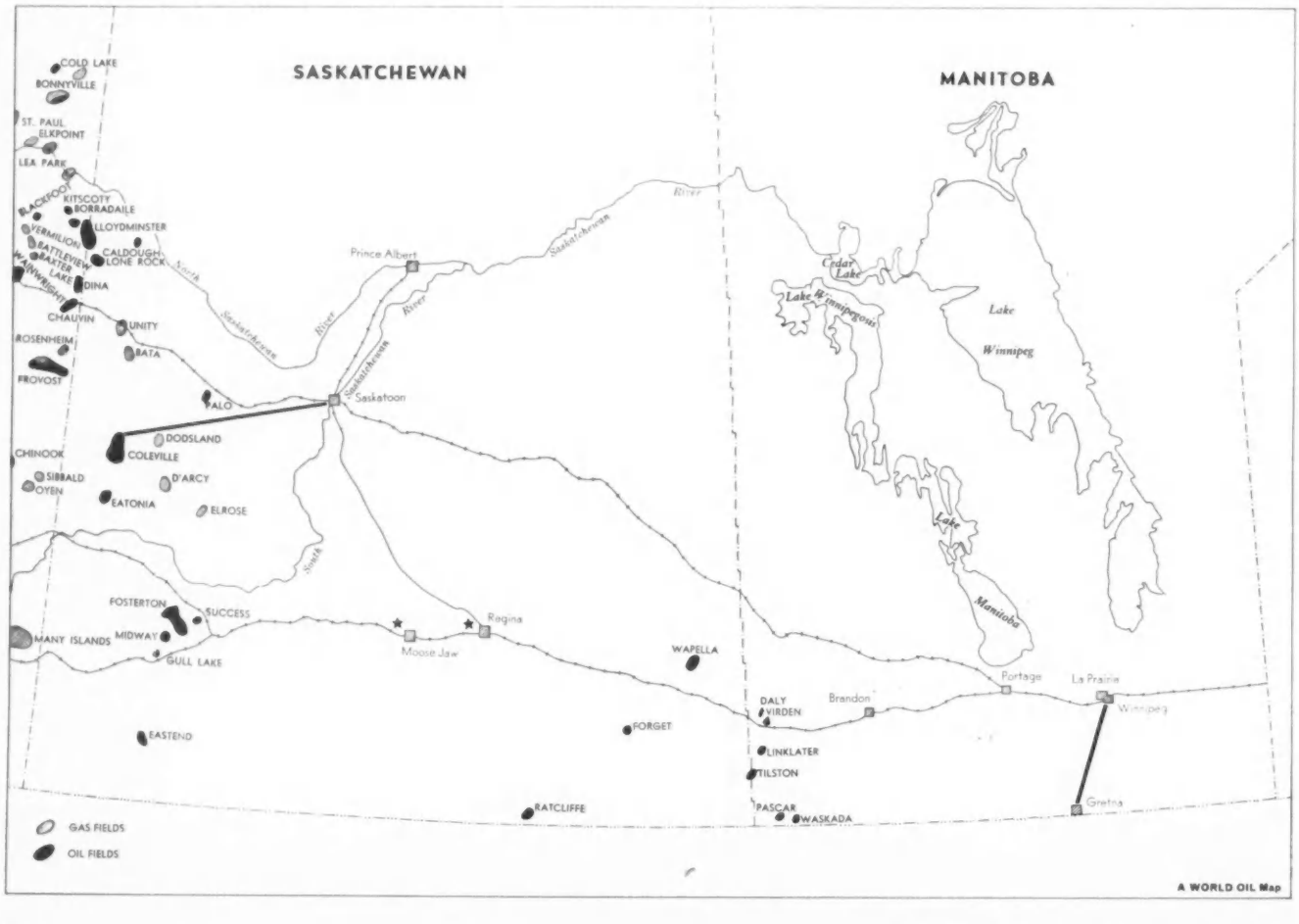
Geophysical activity in Western Canada reached an all-time high also, in 1952, with total parties in the field reaching a peak of 185 during the latter part of the year.

As of December 31, 158 seismograph units were operating, along with nine gravity meters and one magnetometer, making a total of 168 parties in the field.

Alberta, of course, accounted for the greatest share of this activity, the year-round figures revealing that this province had 127 units in operation, Saskatchewan 31, British Columbia 7, and Manitoba 3.

Pipe lines providing more crude outlets . . .

Of prime importance to the western provinces, as well as to all of Canada, was the progress made during the year in crude oil pipe line construction designed to provide outlets for ever-expanding productive capacity. The Trans Mountain Oil Pipe Line Company, during February, 1952, commenced construction of its 24-inch, 718-mile crude line which, this fall, is scheduled to start



Imperial Oil Company Photo

PIPELINERS AT WORK on an Imperial Oil Co. products line in Willow Cove.

Socony-Vacuum Oil Company Photo

SEISMIC RIG being set up on location in northern Alberta, Canada.

carrying Alberta crude westward over the Rockies to currently-expanding refineries in the Vancouver, British Columbia, area.

Moderate weather in the fall of 1952 made it possible for pipe line construction crews to get the line 45 percent completed by year-end. Barring unforeseen developments, this crude line should be completed in August of this year, with crude reaching Vancouver during October.

Perhaps typifying the rate at which Western Canada's oil economy has been expanding, is the revelation that even before the Trans Mountain line is completed, it has been necessary to increase its capacity. Original plans called for an initial capacity of 75,000 barrels per day, requiring two pumping stations. In July, 1952, a third pumping station was authorized, to increase throughput to approximately 120,000 barrels per day.

Early in 1953, studies were being made to determine the advisability of adding a fourth station, to provide for an initial capacity of 150,000 barrels per day. Long range studies made by the company indicate that by adding more stations, perhaps up to 12 or 14, the pipe line could transport around 300,000 barrels per day.

Plans already are made for building a branch to the pipe line to deliver 35,000 barrels per day to a refinery to be built shortly at Ferndale, Washington.

At year-end, plans were shaping up for a second major addition to Canada's crude oil pipe line system—one that would further improve the production outlook of the western provinces by assuring more demand, and more continuous, uninterrupted year-round production. This project is to be an extension to the Interprovincial Pipe Line which now delivers crude from Edmonton to lakehead at Superior, Wisconsin, from which point tankers, during navigable months, take the crude on to refineries at Sarnia. Extension to this pipe line, to cost approximately $70 million, is scheduled for completion in the fall of 1953. It will cross northern Michigan to deliver crude directly to Sarnia, eliminating seasonal curtailment caused by winter freeze-over of the lakes.

Initially capable of handling 100,000 barrels per day, the new extension will assure a more steady production rate for producers in the prairie provinces, as well as create more demand for their crude.

	DRILLING IN CANADA										CANADA OIL PRODUCTION						
	WELLS COMPLETED IN 1952					WELLS COMPLETED IN 1951					PRODUCTIVE WELLS				CRUDE OIL PRODUCTION (Barrels)		
WESTERN CANADA—By Province	Oil	Gas	Dry	Total Wells	Total Footage	Oil	Gas	Dry	Total Wells	Total Footage	Producing	Shut in	Total	Daily End of 1952	Year 1951	Year 1952	Cumulative Through 1952
Alberta	946	38	546	1530	6,631,529	739	101	328	1168	5,088,407	3312	347	3659	180,000	46,915,384	58,915,723	.....
Saskatchewan	210	19	226	455	1,450,621	16	3	47	66	267,709	308	n.a.	n.a.	5,614	n.a.	1,696,505	.....
Manitoba	32	....	35	67	201,014	5	....	5	5	37,204	32	n.a.	n.a.	1,100	n.a.	107,300	.....
British Columbia	....	12	4	16	94,763	....	3	11	14	74,138	....	....	....	.....	.....	.....	.....
N. W. T.	....	....	16	16	20,917	....	1	1	2	3,732	23	37	60	n.a.	n.a.	314,217	.....
Total	1188	69	827	2084	8,398,844	760	107	392	1255	5,471,190	3675	n.a.	n.a.	n.a.	n.a.	61,033,745	.....
EASTERN CANADA—By Proivince																	
Ontario	27	165	157	349	376,827	12	158	147	317	354,680	1483	n.a.	n.a.	n.a.	197,142	191,814	.....
New Brunswick	....	....	1	1	2,600	....	....	....	....	.....	25	n.a.	n.a.	n.a.	n.a.	14,700	.....
Total	27	165	158	350	379,427	12	158	147	317	354,680	1508	n.a.	n.a.	n.a.	197,142	206,514	.....
Total Canada	1215	234	985	2434	8,778,271	772	265	539	1572	5,825,870	5183	n.a.	n.a.	n.a.	n.a.	61,240,259	299,199,000

Important new product lines also were completed during the year. These included a 188-mile line from Imperial's Sarnia refinery to the Toronto-Hamilton area and another which moves products westward from Montreal to Ottawa and the Toronto area. The former has a capacity of 39,000 and the latter a capacity of 45,000 barrels per day.

Canadian refining capacity during the year also showed an increase, and further expansion of some plants is under way or planned. The country now has a crude oil charging capacity of slightly more than 490,000 barrels daily. Quebec, with 172,000 holds the top position in charging capacity, and Ontario, with 103,000 barrels capacity is in second place. Western Canada provinces, with 29 of the country's 39 plants, provided a total charging capacity of nearly 193,000 barrels per day.

During the year, and for the first time, Alberta crude was processed in a British Columbia refinery. In September, Imperial Oil started rail shipments from a point near Edmonton to its refinery at Vancouver. These shipments, designed only to tide over the company's needs until this fall when the Trans Mountain line commences operations, were expected to provide about 5000 barrels per day to the Vancouver refinery.

Refineries in the Vancouver area are expanding facilities in anticipation of an increased supply of crude when the Trans Mountain line is completed this fall. A new 5000-barrels-per-day refinery is scheduled to be built at Kamloops, B. C., on the route of the new pipe line and at least one other company, British-American, has expressed intention to consider construction of a plant in the Pacific Northwest area.

Alberta leads all activity . . .

During the year, Alberta continued to occupy first place in all categories relating to exploration, drilling and production.

Of the 2084 wells drilled during the year in Western Canada, Alberta accounted for three-fourths of them, or 1530. Of these 946 were oil wells, 38 gas wells and 546 dry holes. By year-end, Alberta had 3659 producible oil wells, although 3312 were producing at the end of the year.

This represents a sizable increase over the province's 2731 producible oil wells in 1951 and the 1995 at the end of 1950. Of total producible wells, Leduc-Woodbend field, with 1082, accounted for the largest share, topping former first place Redwater, which had 926 producible wells in 1952.

Production-wise, however, Redwater still held the lead, with a year's average of 65,700 barrels per day, as compared with Leduc-Woodbend area's average of 49,000 barrels daily.

Total province production averaged 161,000 barrels daily and some idea of its rapidly increasing production rate can be gained by comparing this figure with 1951's daily average of 125,500 barrels and 1950's daily average of only 74,000 barrels. An estimated 95 billion cubic feet of gas was produced from Alberta fields during the year.

Peak production in Alberta occurred during October when daily crude oil production reached an all-time high of 191,547 barrels. In December, 1952, daily production amounted to 180,000 barrels and, at that time, the province had an estimated productive capacity of about 300,000 barrels per day, an increase of approximately 22 percent over the estimated 245,000 barrels per day capacity existing the previous year. Total reserves at year-end were estimated to be in the order of 1,526,389,000 barrels.

Footage drilled in Alberta also scored a new high during 1952. A total of 6,631,529 feet of hole was drilled by year-end, more than 30 percent higher than 1951's total of 5,088,407 feet. During the year, peak drilling activity occurred during October, when 664,518 feet of hole was drilled. Peak month during the previous year was in July when 561,258 feet was drilled.

High on the list of important discoveries made in Alberta during the year were the Bonnie Glen, Pigeon Lake and Fiveland areas, each several miles apart and extending still farther to the southwest the prolific D3 Devonian reef trend established by the Wizard Lake find of the previous year. Thick pay sections, as much as 680 feet in Bonnie Glen, usually have a thick gas cap section underlain by as much as 200 to 300 feet of oil saturated section. High gravity oil, up to 42 degrees gravity, characterizes production in the area. Total depths range from 6000 to 7000 feet.

At year-end development of these fields was continuing at a rapid rate with evidence accumulating that they ultimately might be joined by continuous production. At year-end, Bonnie Glen field had 18 producing wells. An estimated 250 million barrels of new reserves exist in this newly-developed multi-field area.

Fanning the already high interest in this prolific reef trend was the discovery, early in 1953, of what appears to be still another field along the same trend. As yet not fully evaluated, the new find is California Standard's Homeglen discovery, some 15 miles southwest of Fiveland, which found nearly 400 feet of wet gas pay zone in the D3 reef and, in initial tests of the lower part of the section, flowed high gravity condensate at a 240 barrels-per-day rate.

Another trend which was confirmed as an important producing area in Alberta is the Joseph Lake-Armena-Camrose Viking Sand (Cretaceous) trend extending from 20 to 40 miles in a southeasterly direction from Edmonton. This area, producing from the Viking sand at depths of from 3200 to 3300 feet, was being extended on all sides, with the Armena and Camrose fields becoming joined by continuous production.

The trend represents Canada's largest reserve of high gravity oil produced from a sand formation. Gravity ranges from 36 to 39 degrees. The trend is estimated to contain between 35 and 40 million barrels. By the end of the year 176 wells were producing in the trend.

In March, 1952, a wet gas discovery which was brought in by Canadian Gulf Oil Company in the Nevis area of central Alberta, some 15 miles east of Stettler, has, in the space of less than a year, shaped up as a major wet gas reserve. By late fall, with only six wells completed, the field then was about six miles long by two to three miles wide and had wet gas reserves estimated to be approximately 400 billion cubic feet.

A Basal Quartz oil discovery near the northwest flank of the field may extend the field even further. The gas is found in the D2 formation at depths of from 5200 to 5700 feet. In one of the wells, a thin oil section at the base of the D2 tested 960 barrels

Totco

DOUBLE

DOUBLE

Recorder

Producing *two,* positive, easily read records, the new Totco Double Recorder gives positive proof of Totco's well known accuracy. With VERIFIED accuracy you can be sure and double sure of "Straight hole" all the way. For complete description and prices contact our distributors today.

TOTCO

Be **SURE** *you know, use* **TOTCO**

Technical Oil Tool Corporation
1057 N. La Brea Ave., Los Angeles 38, Calif.

EXCLUSIVE DISTRIBUTORS:

California—The Republic Supply Co. of California
Domestic—The Continental Supply Company
Canada—Oil Well Supply Division
United States Steel Company
Export—Lucey Export Corporation, New York City

per day of 32.7 gravity oil, so there exists some belief that the field will yield oil as well as wet gas. The D3 formation so far has tested wet.

Another discovery, as yet not fully evaluated, but which rates high on the list of important Alberta discoveries made during 1952, was Amerada's Sturgeon Lake outpost, some 74 miles south of Peace River town.

High gravity flowing production was found in D3 reef of Devonian age at a depth of 8919 feet. The discovery created an understandable flurry of excitement and caused considerable speculation as to whether the new find represented a new reef trend, or was on a possible continuation of the reefs already known to exist in the Edmonton and Central Alberta area. The well flowed gas and 35-gravity crude at a 700 barrel-a-day rate from a 75 to 90-foot water-free section of reef. Shut-in pressure was 3900 pounds per square inch.

Since completion of this well, Amerada completed still another discovery, probably on a different structure, in D3 reef about 14 miles southeast of the initial find. This second discovery found high gravity oil in about 70 feet of water-free zone topped at 8707 feet. The company currently is working three drilling rigs in the region attempting to better evaluate the productive possibilities of the area. Other companies also were planning to move in to test adjacent blocks of acreage.

Although the foregoing were among the highlights of Alberta's major field developments, there were numerous other finds, also extensions of existing fields, that contributed to an eventful year for the province.

Saskatchewan activity increasing . . .

Saskatchewan, during 1952, came forth with an impressive string of new discoveries. Some of them showed medium to high gravity crude that gave added impetus to the search for production.

During the year, 455 wells were drilled, 210 of them being oil producers, 19 being gas wells the remainder dry holes. Some 308 wells were producing at year-end. Total production for the year amounted to 1,696,505 barrels, an average of 4650 barrels per day. Total reserves at the end of the year were estimated to be in the order of 124,247,000 barrels, a large proportion of which, of course, is made up of the heavy crudes produced in the Lloydminster-Lone Rock and adjacent areas of west central Saskatchewan.

Total footage drilled during the year amounted to 1,450,621 feet and, in December, some 36 drilling rigs were operating in the province.

With more than 60 million acres under lease in the province and with some 30 discoveries to its credit, Saskatchewan has seen one of its most active and productive years. Of the 30 discoveries made in 1952, 23 of them were oil and seven were gas.

Among the more important discoveries registered during the year were Fosterton, Midway, Cantuar, Success and North Premier, all medium-gravity oil strikes ranging from 18 to 24 gravity. With the exception of Midway, which was a dual zone Jurassic completion, these fields were completed in the Lower Cretaceous. They range in depth from 3000 to 3500 feet and are situated in the southwestern part of the province.

Other important strikes included Ratcliffe, in southeastern Saskatchewan, near the Canadian-U. S. boundary, which was the first high gravity (31 to 35) discovery in the province. It produces from the Mississippian lime at about 6400 feet.

Tide Water Associated's Eastend strike, not far from the International Boundary in the southwest corner of the province caused a flurry of excitement with the completion in September of a well that indicated a production potential of around 800 barrels per day of 22 to 23 gravity crude. Producing from the Jurassic formation, this discovery well was rated the best producer completed in the province up to that time.

The same company's next discovery of major importance proved to be still another significant find. This was their Forget Crown 1, in the southeastern corner of the province, some 70 miles west of Manitoba's Virden field. Considered to be one of the most significant discoveries on the Canadian side of the Williston Basin, the well was tested in the first several weeks of 1953 and, during initial drill stem tests, flowed in one test at a reported rate of 150 barrels per hour of 29 to 30 gravity crude from a 28-foot interval at 3900 feet in the Mississippian lime.

The find lies about half way between Wapella, a 1952 Lower Cretaceous medium gravity strike, some 50 miles to the northeast, and the previously referred-to Ratcliffe Mississippian lime discovery near the International Boundary 63 miles to the southwest.

Crude outlet spurs Manitoba activity . . .

Manitoba experienced an upsurge of activity during 1952 due, to a large extent, to the opening up of markets for existing wells. During the first half of the year, Manitoba's production averaged a total of only 74 barrels per day, but, by fall, with the opening up of additional outlets for the crude, production had increased to around 500 barrels per day and reached, in December, a level of about 1100 barrels per day.

In October, arrangements were made to truck crude to a terminal on the Interprovincial pipe line, only some eight miles southwest of the Virden field. Crude is shipped in 5000-barrel batches through the pipe line and is taken off at Winnipeg, where it is refined.

During the year, 67 wells were drilled in the province, 32 of which were oil wells and 35 being dry holes. Thirty-two wells were on production at year-end. A total of slightly more than 200,000 feet of hole was drilled during the year.

Manitoba reserves, by the end of the year, stood at an estimated 2,106,000 barrels.

During 1952 several discoveries were made in the vicinity of the Virden pool but, at the present time, they have not as yet been fully evaluated. These finds, in the Mississippian lime formation, range in depth from 2200 to 2500 feet and produce 32 to 35 gravity crude from intervals ranging up to 60 feet in thickness. The Tilston pool, 25 to 30 miles south of Virden field, and the Waskada pool, some 45 miles farther southeast, near the International Boundary, were among the 1952 discoveries.

It is expected that 1953 will see a stepping-up in activity in Manitoba, with more operators slated to commence work and with crude outlets now making it possible to market production.

It's BAASH-ROSS... FOR EVERYTHING IN SQUARE KELLYS.

All Sizes—All Designs—All Lengths

PLUS the Most Advanced Construction and Metallurgical Features!

FOR YEARS Baash-Ross has led in the development of a superior line of square Kellys to meet the increasingly rigid requirements of modern drilling operations. And best of all, these top-quality Kellys are available in a range of sizes and designs to meet every operator's need...with or without stop shoulders, elevator spaces, etc.... and in all lengths.

In fact, Baash-Ross provides everything in square* Kellys!

They have Everything in Performance Features!

● Baash-Ross Square Kellys are forged end-to-end from one solid piece of restricted analysis, fine-grained alloy steel, with each heat of steel individually checked for quality by separate test specimens.

● After forging and before heat treating, the dimensional accuracy of the forged square section is checked by an API Kelly Sleeve Gage which must pass freely over the entire length of the square to check maximum allowable tolerances across flats and across corners. Also, accurate caliper measurements are taken to make sure no portion of the driving section is undersize!

● Next, a series of heat-treating operations performed over the *entire length* of the Kelly in one operation, develop the metallurgical properties of the steel to provide the *best balance* of shock-resisting toughness and wear-resisting hardness.

● Additional heat-treatments harden the threaded ends for maximum life and service.

● All residual forging stresses are relieved by these heat-treating processes, thus eliminating the most prevalent cause of bending and deformation.

● The Kellys are then carefully bored by precision drilling machines so that the bore is precisely centered end-to-end, then double-checked by highly-accurate survey devices. For products with bores 2¼" diameter or larger, wall thickness of the Kelly *must not* vary more than one-*sixteenth* inch for each 10 ft. of product length, or fraction thereof.

● The Kelly itself is also accurately surveyed for straightness and *must* be straight within one-*eighth* inch when measured at any point over its entire length.

● The alignment of the projected axis of each threaded end, when checked with the precise Baash-Ross Alignoscope, *must* be within one-*eighth* inch of the longitudinal axis of the Kelly for each 10 ft. of Kelly length, or fraction thereof.

● In addition, threads *must* pass, not only all API specifications, but also unusually rigid Baash-Ross specifications on thread form, taper, lead, finish, etc.

The above highlight only a few of the many controls maintained by Baash-Ross to insure absolute straightness, long-life and maximum all-around performance from every Baash-Ross Kelly!

****The Baash-Ross Lines of Hexagon and Octagon Kellys are equally complete. Write for data on these products.***

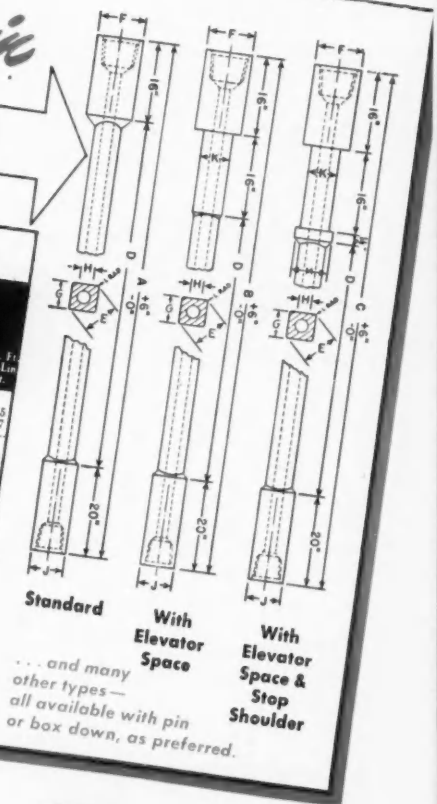
BAASH-ROSS KELLYS ARE AVAILABLE THROUGH LEADING SUPPLY STORES!

They are Available in ..All Sizes ..All Designs

Baash-Ross "Trubore" Forged Upset Square Kellys

Nominal Size In.	LENGTHS: Overall A Ft.	Overall B Ft.	Overall C Ft.	Working Length D Ft.	Top Upset: Joint Size A.P.I. Left Hand In.	Top Upset: O.D. F In.	Bottom Upset: Joint Size A.P.I. Right Hand In.	Bottom Upset: O.D. J In.	Bore: I.D. H In.	Across Corner E In.	Across Flat G In.	Elevator Space: O.D. K In.	Corner Radius L In.	Stop Shoulder O.D. M In.	†Cu. Ft. per Lin. Ft.
2¾	35 28 40	36–4 39–4 41–4	36–6 39–6 41–6	32 35 37	4½ Reg 6⅝ Reg.	5½* 5⅝	2¾ Reg 2⅞ I.F.	3¼ 3⅜	1¹⁵⁄₁₆ 2	3¹⁵⁄₁₆	2⅞	2¹⁵⁄₁₆	6⅝	3⅝	*.165 .327
3	35 28 40	36–4 39–4 41–4	36–6 39–6 41–6	32 35 37	4½ Reg 6⅝ Reg.	5½* 5⅝	2¾ Reg 2⅞ I.F.	3¾ 3⅞	2¼ 2⅜	3¹⁵⁄₁₆	3	2¹⁵⁄₁₆	⅝	4⅛	*.165 .327
3½	35 28 40	36–4 39–4 41–4	36–6 39–6 41–6	32 35 37	4½ Reg 6⅝ Reg.	5½* 5⅝	3½ Reg 3⅝ I.F.	4⅛ 4¼	2½ 2⅝	4¹⁵⁄₁₆	3½	3¹⁵⁄₃₂	⅛	4⅝	*.165 .327
4½	35 28 40 54	36–4 39–4 41–4 55–4	36–6 39–6 41–6 55–6	32 35 37 61	4½ Reg 6⅝ Reg.	5½* 5⅝	4½ Reg 4⅝ I.F.	5½* 5⅝	3½ 3⅝	5¹⁵⁄₁₆	4½	4¹⁵⁄₃₂	⅛	5⅛	*.165 .327
5½	28 40 54	39–4 41–4 55–4	39–6 41–6 55–6	35 37 61	6⅝ Reg.	7¾	5½ Reg 5⅝ I.F.	6¾ 7⅛	4¾ 4⅞	6¹⁵⁄₁₆	5½	5¹⁵⁄₃₂	⅛	6⅛	*.165 .327
6	38 40 54	39–4 41–4 55–4	39–6 41–6 55–6	35 37 61	6⅝ Reg.	7¾	6⅝ Reg. 6¾ I.F.	7¾ 8	5¾ 5⅞	7¹⁵⁄₁₆	6	6¹⁵⁄₃₂	⅜	7	.327

Sizes shown in RED are A.P.I. standard.
* Alternate 5¾ inches O.D.—.180 cu. ft. per lineal ft
† Volume based on largest diameter of kelly



...and many other types— all available with pin or box down, as preferred.

Baash-Ross

TOOL COMPANY *Our 33rd year*

GENERAL OFFICES: 5512 SO. BOYLE AVE., LOS ANGELES 58
OKLAHOMA CITY 9 · HOUSTON 20 · ODESSA · CASPER
Export Offices: 11 W. 42nd St., New York 36

CANADA . . .

British Columbia develops gas reserves . . .

Natural gas was the prime objective of operators in British Columbia during 1952. The discovery in November, 1951, of prolific flows of natural gas in the Fort St. John area in the northeastern part of the province touched off a drilling boom that has resulted, by the end of the year, in a wet gas reserve containing an estimated 1.5 trillion cubic feet, a reserve second only to Alberta's prolific Pincher Creek field.

During the year, 16 wells were drilled in British Columbia. Four of the wells drilled were dry holes. Outside of some oil shows that still are in the process of being evaluated, and which were indicated during short formation tests, all wells have been completed as gas producers. The Fort St. John structure, at year-end, already was more than 12 miles long, extending in a northwest-southeast direction. The field straddles the Alaska Highway.

Significant in this area is the fact that some nine separate zones, productive at various points within the field, have been found to be productive. These zones range from Lower Cretaceous sands around 2000 feet on down to the Permo-Penn formation at depths of around 6300 feet.

Gas from the Fort St. John field and other fields within the Peace River area of both B. C. and Alberta, which area was set aside as a district from which gas might be exported from Alberta, is slated for the Pacific Northwest market area if and when the U. S. Federal Power Commission hands down its decision to allow importing into the U. S. Both the Alberta provincial government and the Federal Government have granted approval to export gas from the Peace River area.

Surveying and staking of Westcoast Transmission Company's projected pipe line from this area to the Pacific Northwest is already well advanced but actual construction is not expected until the FPC decision, if favorable, is announced.

Almost 30 million acres of land in British Columbia now are under lease. With the exception of several wildcats drilling in other areas, the bulk of activity in British Columbia is confined to the Fort St. John district.

Northwest territories activity expected . . .

Interest in Northwest Territories, during 1952, experienced a sharp upturn. Presence of commercial production from Devonian rocks at depths of around 1500 feet in the Norman Wells district, near the Arctic Circle, always has been at least one compelling reason for interest in the Territory but inaccessibility, lack of roads and remoteness from markets have been strong deterrents to any major exploratory projects.

During the past year or so, however, with the discovery of flowing production from Devonian reefs in the Peace River area of Alberta; the fact that oil seepages and gas shows are known to exist in certain areas in the vicinity of Great Slave Lake between 300 and 400 miles southeast of Norman Wells; all have contributed to the building up of more interest in the Territory. During the year, some 47,000 square miles were taken up for petroleum exploration rights.

A total of 16 wildcat wells, none productive, were drilled in the Territory during the year. By year-end, the Normal Wells field had 23 of its approximately 60 wells on production, serving local needs. Average production rate for the year was slightly over 850 barrels per day. Crude reserves were estimated to amount to around 26,767,000 barrels.

Anticipating an increase in applications for exploratory permits within the Territory, the Federal Government has just completed a project which provides a grid system designed to greatly facilitate the granting and recording of permits in the area.

Eastern Canada activity during 1952 was featured principally by exploratory drilling in the province of Ontario, where the number of exploratory wells drilled exceeded by 32 the number drilled in 1951. This increase was due largely to more exploration for shallow Devonian oil, particularly in the southwestern portion of the province.

Two Discoveries. Two small Devonian oil discoveries were made during the year; also, one small Devonian gas and four Silurian gas pools were found in the province. Major portion of the exploratory effort was directed at the Salina-Guelph (Silurian) horizon.

349 wells were drilled in Ontario during the year. Of this total, 27 were oil wells, of which 25 were development and 2 exploratory. A total of 165 gas wells was drilled, of which 161 were development and 4 exploratory completions. Dry holes totaled 157, of which 92 were classed as development drilling and 65 as exploratory projects.

Total footage for Ontario amounted to 376,827 feet. Revealing the shallow nature of the drilling, depth of the wells drilled in Ontario during 1952, based on total footage, was approximately 1080 feet.

Production in Ontario for 1952 totalled 191,814 barrels. At year-end, producing oil wells numbered 1483 and gas wells, 3564.

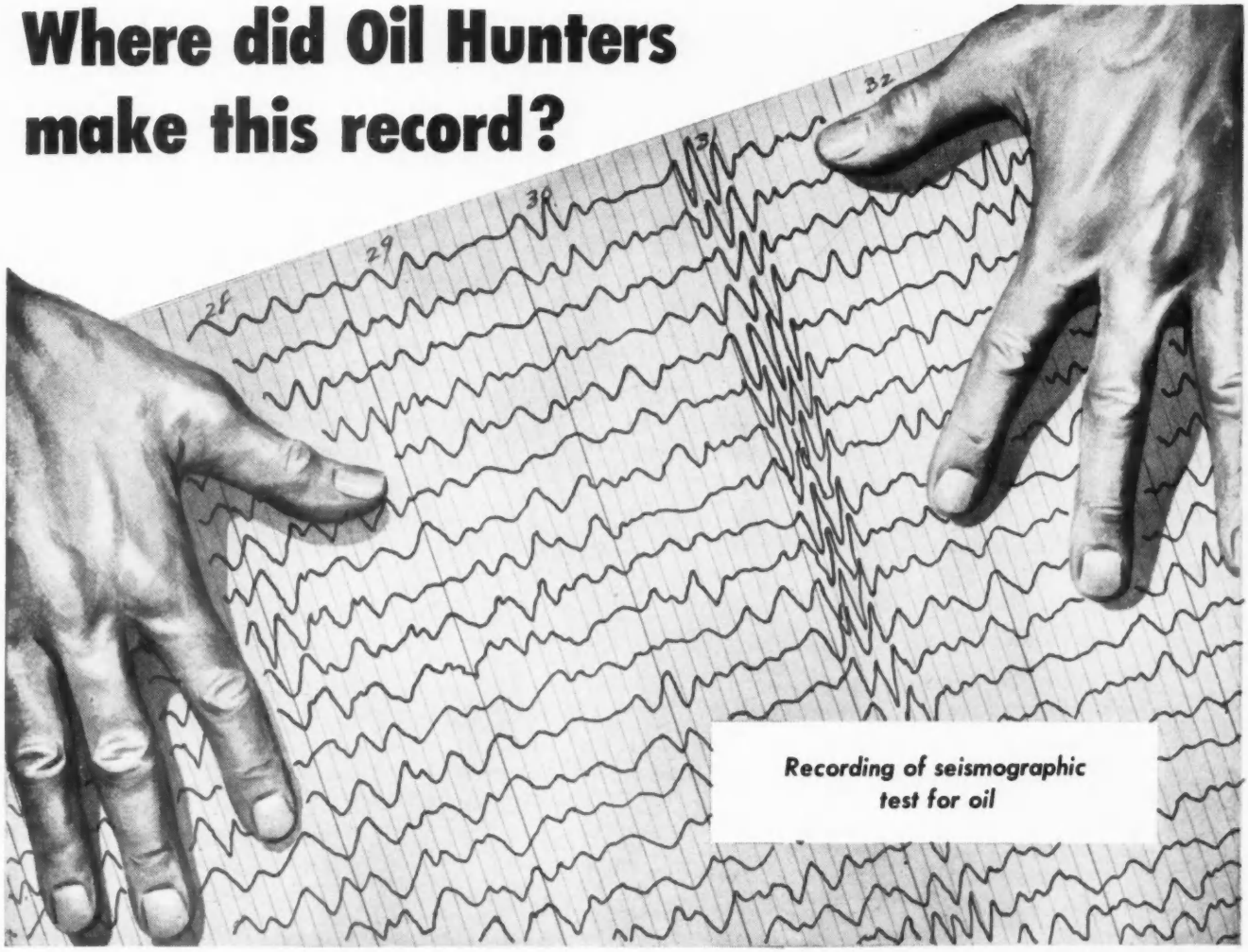
Proved reserves of Ontario are estimated at approximately 3.5 million barrels. Gas reserves are estimated to be in the order of 200 billion cubic feet. With an expanding population, the province will be depending more and more on gas to be imported from the western provinces. Domestic gas reserves of the province, it is estimated, will be exhausted, or will be approaching exhaustion, in from 10 to 15 years.

New Brunswick, at year-end, had 25 producing oil wells, some of them operated intermittently, and 43 gas wells. Production for 1952 amounted to 14,700 barrels. One exploratory dry hole was drilled to 2600 feet in the province during the year.

One exploratory well, which was dry, was drilled to 1994 feet in Newfoundland during 1952.

Total crude production for Eastern Canada during 1952 amounted to 206,514 barrels. Gas produced in these provinces is estimated at 8,183,042 Mcf. By far the largest part of crude oil and gas production for the year came from Ontario.

Where did Oil Hunters make this record?



Recording of seismographic test for oil

4 to 10 — It's in Canada!

More than 4 out of 10—44.7%, in fact—of all geophysical crews searching for oil outside the U.S. in 1951 were operating in Canada.

Quick and reliable information can be an important advantage in this keen competition for Canada's rich oil prizes. With 131 branches in the oil provinces alone, Canada's First Bank is on the ground to answer your questions, as well as provide flexible financial service.

ASK THE BofM ABOUT . . .
Canadian Company Formation
Reservations of Oil and Gas Rights
Lease Terms and Royalties
Taxation and Exchange

FOR A PROMPT RESPONSE to your inquiry, contact Gordon V. Adams, Special Representative, Bank of Montreal, Calgary, Main Office, 140 Eighth Avenue West, Calgary, Alberta, Canada. (Telephone 2-8333).

NO STOCK RECOMMENDATIONS

While the Bank is prepared to provide all available information on the oil industry, it does not make recommendations regarding the purchase of individual oil stocks.

"MY BANK" TO A MILLION CANADIANS
B of M

BANK OF MONTREAL

Canada's First Bank Coast-to-Coast

In Canada since 1817 • In U. S. since 1859

NEW YORK . . . 64 Wall Street • SAN FRANCISCO . . . 333 California Street

CHICAGO: Special Representative's Office, 38 South Dearborn Street

Head Office: Montreal

575 BRANCHES ACROSS CANADA • RESOURCES EXCEED $2 BILLION

MEXICO CITY HEADQUARTERS of Petroleos Mexicanos, the monopoly which controls Mexico petroleum activities.

Mexico . . . Crude production drops 3 percent. Completion of 313 wells marks new drilling record. Goal for 1953 set at 400 new wells.

MEXICO'S CRUDE production in 1952 totaled 77,068,087 barrels. This was a decrease from the previous year of 21,872 barrels, or 3 percent, on a 1952 daily average yield of 211,101 barrels, itself a drop of 105 barrels from the previous year's daily average of 211,206 barrels.

Drilling Record. The nation established a new drilling record last year with the completion of 313 wells. In the previous banner year, 1951, 266 wells were completed. Drilling activity in 1952 resulted in 147 oil wells, 144 failures and 22 gas wells.

Of the 169 successful completions in 1952, the Northern District accounted for 90; Isthmus District, 74; Southern District, 66; Poza Rica and adjacent areas, 50; and Northeastern District, 33. Nineteen of the 22 gas producers were drilled in the Northeastern District. One gas well each resulted from drilling last year in the Northern and Isthmus Districts and Poza Rica.

Footage Up. With the increase in drilling came a paralleling rise in footage drilled. Last year, the total reached to 1,239,754 feet, as compared with 904,023 feet in 1951. At the close of 1952, 58 wells were drilling. At the corresponding period the previous year 48 were in operation.

Chapacao field in Tamaulipas, Northern District, accounted for the greatest number of completions—41, of which 13 found oil. The remainder were failures. Cacalilao field, also in Tamaulipas, accounted for an equal number of oil well completions—13—by the completing of only 24 wells.

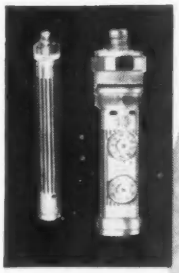
The field accounting for the greatest number of oil wells last year was Juan Felipe field in the Southern District, where 15 of 21 completions were producers. Following, in order, were Rabon Grande field, Veracruz, 14 crude producers out of 17 attempts, and Cacalilao and Chapacao, each with 13 successful completions.

While Petroleos Mexicanos, the country's oil monopoly, controls petroleum activity in Mexico, several U. S. companies are allowed to drill on a contingent basis.

One of these companies, American Independent Oil Company, conducts its operations through Mexican American Independent Company (CIMA), in the ownership of which it is affiliated with Cie. Raffinerie Belges des Petroles (Petrofina) and Edwin W. Pauley.

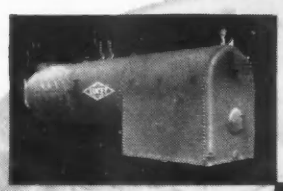
CIMA's major activity in 1952 centered around further development of its Rabon Grande field, a 1951

LUCEY *export*



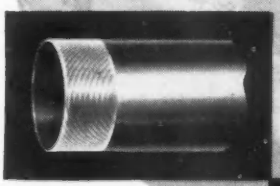
International distributors of:

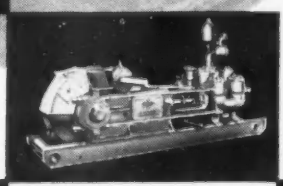
Wheland Rotary Drilling Equipment
Lucey Boilers & Insulation Casings
Pittsburgh Steel Tubular Products
Union Wire Rope
"Totco" Drift Recorders
Reed Rock Bits and Tool Joints
Hughes Rock Bits & Tool Joints
Byron Jackson Equipment

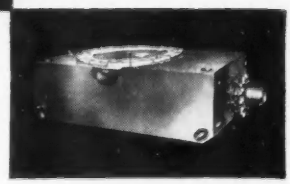


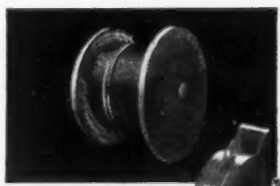
LUCEY EXPORT CORPORATION
233 BROADWAY, NEW YORK 7, N.Y.

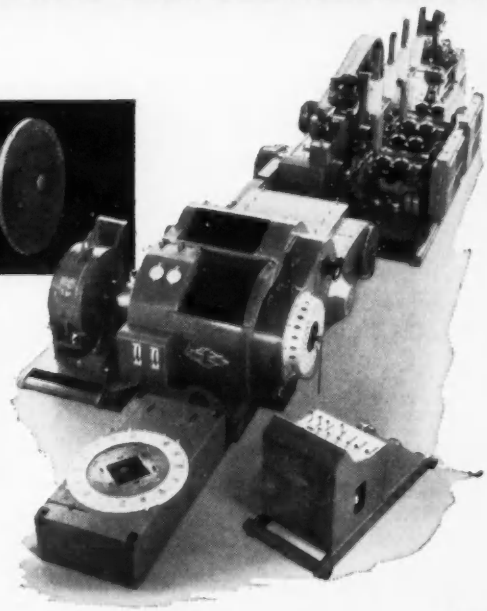
Broad Street House . London, E.C. 2, England • Sterling Building . . . . . Houston, Texas
Calle Defensa 320 . . Buenos Aires, Argentina • Calgary and Edmonton . Alberta, Canada
Rua do Carmo, 8—7 . . . Rio de Janeiro, Brazil











discovery. This field is situated on the shore of the Gulf of Mexico, about five miles east of Coatzacoalcos, in Veracruz State, and the structure lies partially under the Gulf and partially onshore. Production is from sands of Miocene Age.

During 1952, 14 wells were completed by CIMA as producers. Production reached a peak of more than 7000 barrels daily and a cumulative total for the year of 1,893,413 barrels. At the close of last year, it was believed that the field had been completely drilled up, with total estimated reserves of approximately 5 million barrels, and production was running at the rate of about 4000 barrels a day.

Seismic Activity. A seismic reconnaissance was carried out over the Calzada area lying west of the Coatzacoalcos River, between the Gulf of Mexico and the town of Minatitlan.

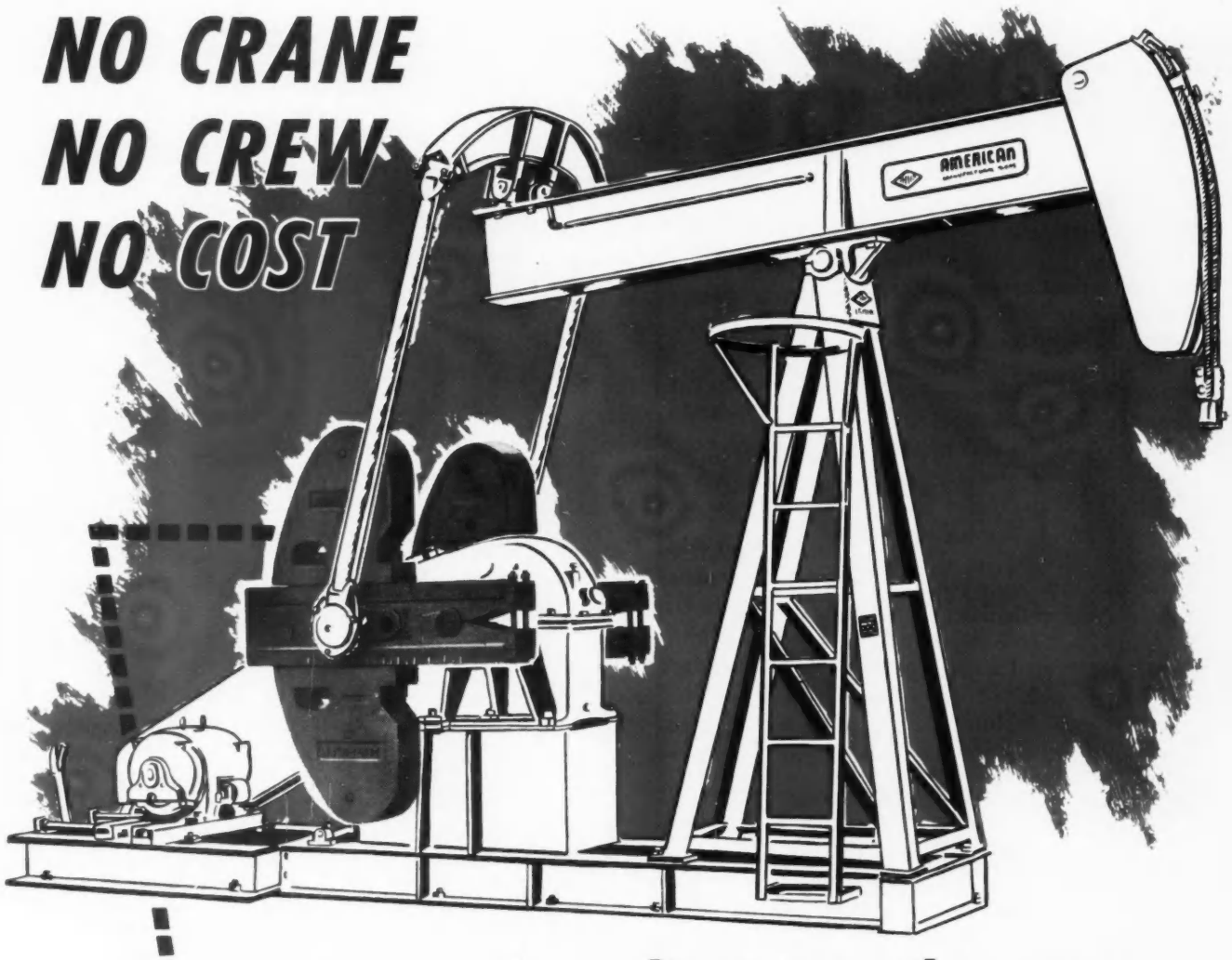
Oil Production in Mexico

DISTRICT	COMPANY	Year of Discovery	Shut In	Producing	Total	CRUDE OIL PRODUCTION (Barrels) Daily End of 1952	Year 1951	Year 1952	Cumulative Through 1952
Northeastern	Petroleos Mexicanos (Pemex)	1948	18	48	66	3,031	785,478	869,431	3,013,349
Northern	Petroleos Mexicanos (Pemex)	1901	175	585	770	19,802	8,539,109	8,140,434	837,429,855
Southern	Petroleos Mexicanos (Pemex)	1908	85	279	364	18,988	7,413,958	7,615,711	1,117,627,782
Ordonez-Horcon	Petroleos Mexicanos (Pemex)	1952	..	8	8	9,658	..	507,935	507,935
Poza Rica & Adjacent	Petroleos Mexicanos (Pemex)	1930	44	135	179	136,332	52,527,048	50,607,015	515,200,613
Isthmus	Petroleos Mexicanos (Pemex)	1921	99	310	409	23,290	7,824,366	9,327,561	186,465,537
Totals		....	421	1,365	1,796	211,101	77,089,959	77,068,087	2,660,245,071

Drilling in Mexico

AREA and FIELDS	WELLS COMPLETED IN 1952 Oil	Gas	Dry	TOTAL Wells	Footage	Drilling End of 1952	WELLS COMPLETED IN 1951 Oil	Gas	Dry	TOTAL Wells	Footage
NORTHWESTERN DISTRICT:											
Baja California	..	..	..	..	.....	..	..	..	1	1	9,848
NORTHEASTERN DISTRICT:											
Coahuila	..	..	..	..	.....	..	..	..	1	1	6,570
Tamaulipas:											
Brasil	..	2	2	4	32,000	2	..	1	1	2	15,581
Cano	..	2	2	4	25,495	..	2	2	1	5	35,184
Monterrey	..	3	..	3	19,997	1	1	..	..	1	6,562
Reynosa	..	7	1	8	56,982	2	..	2	..	2	14,047
Trevino	5	3	..	8	54,408	2	..	..	..	..	.....
El Mexicano	..	2	..	2	18,364	..	..	..	..	..	.....
Wildcats	..	..	4	4	37,660	2	2	7	6	15	87,286
NORTHERN DISTRICT:											
San Luis Potosi:											
Limon	2	..	4	6	11,498	..	11	..	8	19	55,387
Wildcats	1	..	3	4	10,057	..	..	..	..	..	.....
Tamaulipas:											
Cacalilao	13	1	10	24	41,955	2	9	1	11	21	34,343
Chapacao	13	..	28	41	80,698	4	7	..	11	18	34,057
Tulillo	3	..	2	5	8,094	2	..	..	1	1	2,251
Paciencia	1	..	1	2	3,591	3	..	..	..	..	.....
Altamira	..	..	2	2	3,413	..	..	..	2	2	4,414
Wildcats	..	..	2	2	7,427	1	..	..	2	2	7,578
Vera Cruz:											
Panuco	3	..	1	4	6,289	..	2	..	2	4	5,812
SOUTHERN DISTRICT (Veracruz):											
Main Belt or Golden Lane:											
San Miguel Chiconcillo	..	..	2	2	4,885	..	1	..	2	3	7,792
Amatlan	1	..	1	2	3,399	..	..	..	..	..	.....
Cerro Azul	3	..	6	9	17,272	..	5	1	18	24	49,135
Juan Felipe	15	..	6	21	43,653	1	14	..	6	20	40,575
Alazan	..	..	1	1	2,171	..	..	..	6	6	13,222
Horcones	..	..	1	1	1,921	..	1	..	3	4	8,028
Potrero del Llano	1	..	..	1	2,442	..	2	..	4	6	12,628
Cerro Viejo	..	..	3	3	5,924	1	4	..	9	13	28,598
Alamo-Cicuaque	..	..	4	4	8,927	..	..	..	..	..	.....
Paso Real	1	..	1	2	4,940	..	..	..	..	..	.....
Others:											
Tamiahua	4	..	1	5	17,578	..	1	..	1	2	6,979
Solis	6	..	3	9	21,996	2	..	..	..	..	.....
Wildcats	..	..	6	6	30,575	2	..	..	7	7	36,930
POZA RICA AND ADJACENT AREAS:											
Poza Rica	8	..	..	8	64,613	3	11	11	1	12	94,241
Escolin	10	..	2	12	104,058	3	9	..	..	9	78,612
San Miguel Mecatepec	4	..	3	7	54,374	2	5	..	..	5	38,810
Presidente Aleman	4	..	1	5	40,551	..	5	..	1	6	54,342
Coatzintla	2	..	1	3	22,253	..	..	..	..	..	.....
Poza de Cuero	2	..	..	2	11,355	1	..	..	..	..	.....
Ocotopec (Horcon)	2	..	3	5	14,403	..	1	..	2	3	14,128
Tenixtepec (Ordonez)	5	1	1	7	37,526	2	..	..	..	..	.....
Wildcats	..	..	1	1	9,298	1	..	..	2	2	15,909
ISTHMUS DISTRICT:											
Tabasco:											
Jose Colomo	8	1	4	13	72,536	3	2	..	..	2	11,300
Wildcats	..	..	..	..	.....	..	1	..	5	6	30,048
Veracruz:											
Acalapa	..	..	1	1	4,149	..	..	..	..	..	.....
El Plan	6	..	6	12	62,749	3	16	..	3	19	88,631
El Burro	1	..	..	1	4,828	1	..	..	..	..	.....
Rabon Grande	14	..	3	17	56,968	..	4	..	2	6	19,678
Concepcion	..	..	4	4	14,952	..	1	..	..	1	2,835
Nueva Teapa	..	..	2	2	3,363	3	..	..	..	..	.....
Ixhuatlan	7	..	2	9	10,219	1	1	..	1	2	3,301
Arroyo Blanco	2	..	1	3	12,360	1	..	..	..	..	.....
Wildcats	..	..	11	11	52,201	8	4	..	10	14	66,121
Yucatan:											
Chicxulub	..	..	1	1	5,407	..	..	..	..	..	.....
Totals	147	22	144	313	1,239,754	58	122	14	130	266	904,023

NO CRANE
NO CREW
NO COST



...in adjusting the new
AMERICAN Counterbalance Crank

This new American Pumping Unit saves you operating time and money because it is a fast, easy one man job to adjust the unit counterbalance. Simply loosen two bolts that hold each master weight in position and turn the acme screw that moves the weight to the desired position. Yes, that's all there is to adjusting the unit counterbalance on the new American Pumping Units. Specify American and cut *Your* operating cost. Send today for free catalog or contact your nearest supply store or American Office.

AMCOT

AMERICAN MFG. CO. OF TEXAS

FORT WORTH 11, TEXAS

Houston • Kilgore • Odessa • Tulsa

Calgary, Alberta, Canada

Results of this survey suggested the possible existence of three structures. Seven test wells were drilled on these structures, but no indications of commercial production were found.

A wildcat was begun on the Macultepec structure, situated approximately six miles northwest of Villahermosa town, capital of Tabasco State, to test the Cretaceous sediments in the Jalpa area. In July, the well encountered serious difficulty with heaving shales in the Lower Eocene, and the hole was abandoned without testing. The rig was skidded to a new location, and at the end of the year the offset well was drilling ahead at 3800 feet.

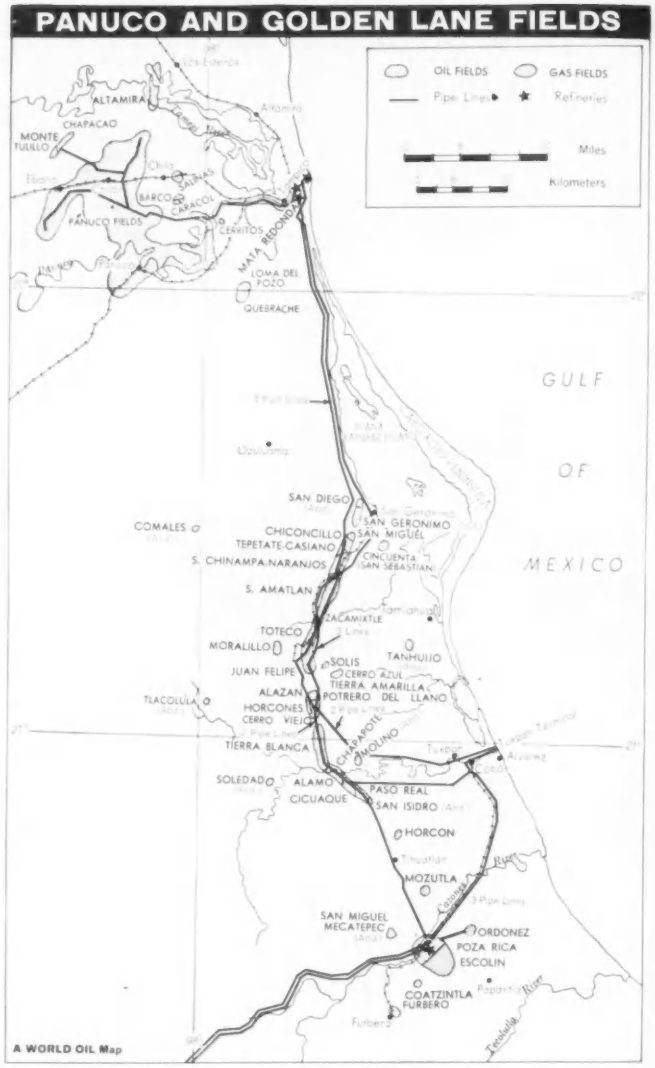
Sen. Antonio J. Bermudez, Pemex director-general, said in a report issued on the 15th anniversary of expropriation and nationalization of the oil industry that new deposits of oil and gas were located at three already-established fields—Tierra Blanca, Jose Colomo and El Burro.

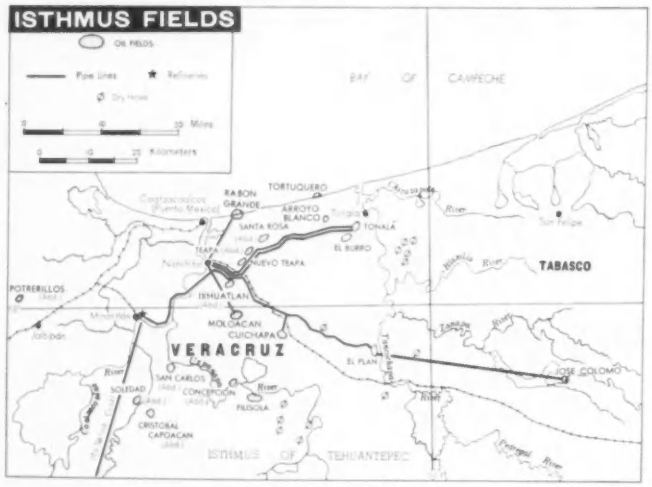
Sen. Bermudez said the 1953 oil industry program called for:

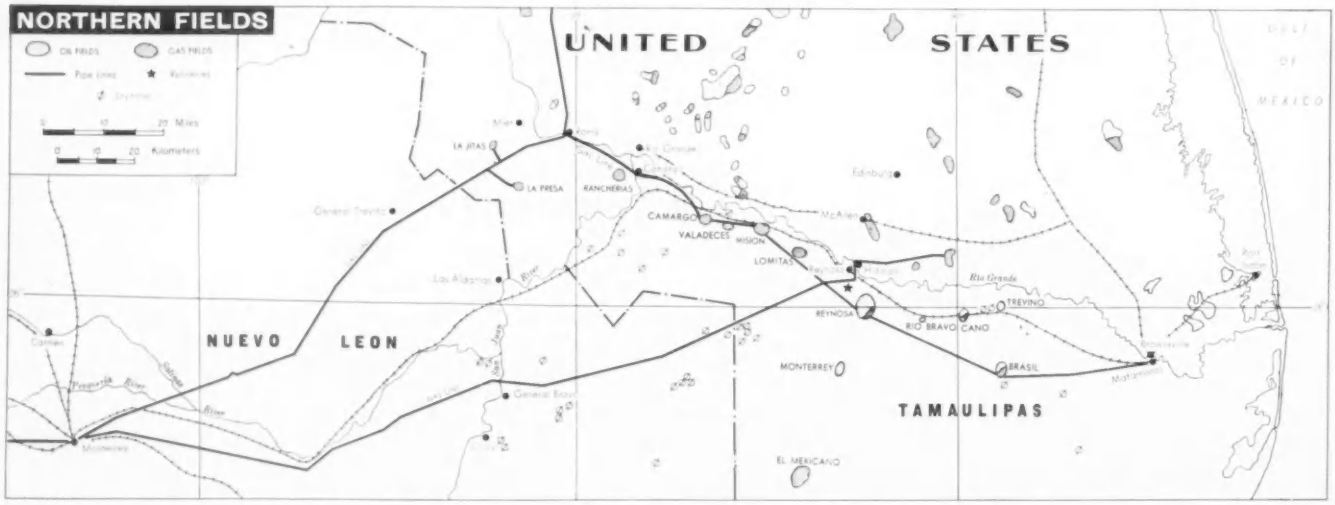
- At least 400 new wells, of which about 75 will be exploratory tests.
- A pipe line network from Salamanca to Morelia and from Lagos to Aguascalientes.
- The purchase of 500 rail tank cars in the next six years.

Pemex said that Ordoñez field, a 1952 discovery, was the most important since 1932. Seven wells had been drilled in the new field before the close of the year. Five found oil, one discovered gas and one was a failure.

Foreign Aid? Possibly because of a decline in crude oil and refined products exports from 22.4 million barrels in 1951 to 15.4 million barrels last year, a committee of the Chamber of Deputies discussed the question of foreign aid in the development of Mexico's oil deposits. A dispute which arose about the middle of 1953 was not settled because the chamber committee was scheduled to go out of office before the Congress was to have reconvened.







TYPE "PRZ" PRESSURE PACKER

the more pressure you apply the tighter it gets

SAFE to run
SIMPLE to operate
POSITIVE removal

Full 2", 2½", or 3" opening through entire length of tool. Can pump from below packer. Easily cement lined.

Standard Fishing Neck

Standard Fishing Neck

Corrosion free manganese bronze J pin

Springs holding slips in compression which forces them away from casing when tool is released.

Oil Resistant Packing Element

Corrosion free cast iron bottom.

Corrosion free manganese bronze insert which has bottom tail pipe connection and upper left hand back-off thread for tubing mandrel.

C-104

USES . . .

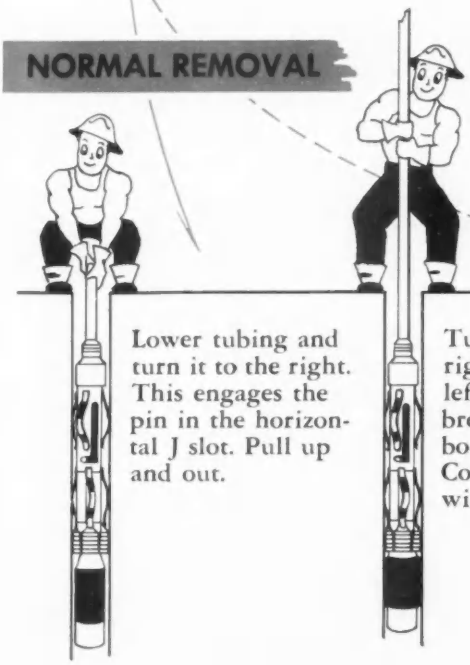
Flood water injection.

Gas injection.

Salt water disposal.

Isolating casing leaks (both injection and pumping wells).

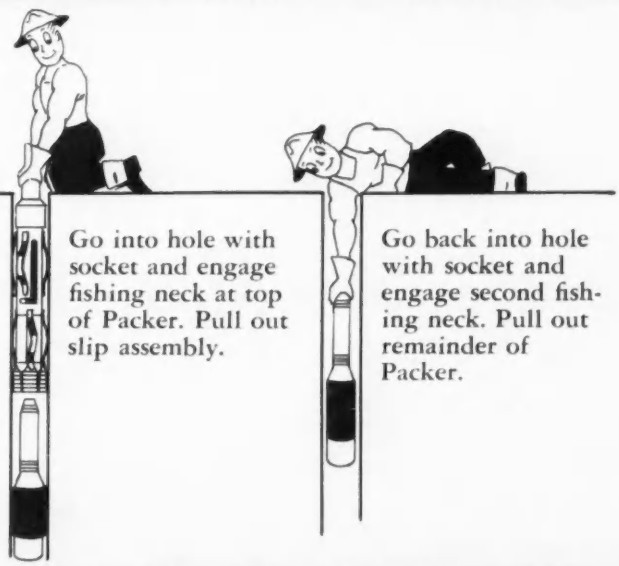
NORMAL REMOVAL



Lower tubing and turn it to the right. This engages the pin in the horizontal J slot. Pull up and out.

Turn tubing to the right and back-off left hand threads in bronze bushing at bottom of Packer. Come out of hole with tubing.

REMOVAL IF STUCK AFTER YEARS IN HOLE



Go into hole with socket and engage fishing neck at top of Packer. Pull out slip assembly.

Go back into hole with socket and engage second fishing neck. Pull out remainder of Packer.

"Serving the Industry since 1878"

LARKIN & CO., INC. BUTLER, PA.

LARKIN of Butler

Branch Offices: Tulsa, Oklahoma and Olney, Illinois

Alaska . . . U. S. Navy halts exploration program. Search turns south as Phillips, U. S. sign pact to explore Gulf of Alaska area.

THE U. S. NAVY'S 1952 exploration program on the Arctic slope of Alaska consisted of the completion of six test wells, three seismic crews working a total of 15 crew months, three surface geological parties, and photogeological mapping of selected anticlines.

Of the six test wells completed last year, one, Umiat 10 which was begun in 1951, found oil; two, Square Lake 1 and Wolf Creek 3, were gas productive; and three were dry holes—Grandstand 1, Umiat 11 and Avak 1, which was spudded-in in 1951. Geological and seismic work confirmed the evidence of thrust faulting in the foothills belt which indicates a similarity to oil and gas fields in the Canadian foothills belt.

While Umiat was not sufficiently developed as of Jan. 1, 1953, to determine proved reserves, the estimated recoverable crude from the area as of that date was between 30 million and 100 million barrels. Total footage drilled during 1952 amounted to 20,582 feet, but no oil was produced.

The exploration program was under the general direction of Capt. R. H. Meade (CEC), USN, director, Naval Petroleum Reserves. Actual field work was carried out under a Bureau of Yards and Docks contract by Arctic Contractors, Inc. Geophysical work was performed under a subcontract by United Geophysical Company, and the Navy Oil Unit of the U. S. Geological Survey handled the geological work.

Reserve Created. Naval Petroleum Reserve No. 4, which comprises an area of about 37,000 square miles, was created by an executive order of President Harding in February, 1923. There is an additional area of about 39,000 squares miles withdrawn by Public Land Order 82 in January, 1943, which is available to the Navy for exploration. Thus, the Navy's oil exploration program in Northern Alaska has concerned the entire sedimentary basin in Alaska north of Brooks Range.

However, the U. S. Navy's 1953 withdrawal of its request for a $9.7 million appropriation for fiscal 1954 revealed that development of Northern Alaska's oil will have to await a more urgent need for it. Chairman Short (R-Mo.) of the House Armed Services Committee said at a hearing this year that expenditures on Naval Petroleum Reserve No. 4 around Point Barrow already have exceeded $50 million.

Short said Alaskan exploration was being conducted in an "isolated area" and that "neither petroleum nor gas has been found in commercial value." The problems of producing and utilizing any oil found would be tremendous, he added. Needed, for example, he said, would be a pipe line costing at least $150 million.

Short also pointed out that defending a reserve in the area would be difficult in the event of war with Russia.

Secretary of Navy R. B. Anderson, in telling the committee that the Navy's 1954 appropriation request would be withdrawn, said that no wells were being drilled currently, that steps would be taken for orderly abandonment of the Alaska program and that efforts would be made to salvage all funds possible.

Captain Meade told the committee that there was good reason to believe the area contains substantial reserves. The Navy believes there is a possibility of eventually making important oil field discoveries and that it might be advisable later to resume work in the area.

Search Goes South. But as the search for oil in northern Alaska drew to an end in 1953, efforts were begun to discover it in the south. Phillips Petroleum Company and the U. S. Department of Interior concluded negotiations on an exploration pact covering about a million acres in the Yakataga and Katalla districts on the Gulf of Alaska.

The site lies diagonally across the territory from the Reserve which totals about 37,000 square miles in North Alaska. Phillips' contract requires it to drill 12 exploratory wells, six in each district, over a ten-year period.

Central America . . . petroleum operations spotty . . . limited by lack of geological evidence and political barriers in four nations.

PETROLEUM OPERATIONS in the seven republics of Central America have been conducted on a spotty piecemeal basis, limited to some extent by lack of geological evidence of oil deposits, but primarily by the political climates of four of the nations that definitely discourage private investments by oil companies.

Concession may be obtained by private capital companies in all of the nations except Guatemala, though the political and government trends in recent years would seemingly discourage petroleum investments in Honduras, Nicaragua and Panama. Favorable climates for operations exist in Costa Rica, British Honduras and El Salvador. Operations are being conducted in two of these nations—Costa Rica and British Honduras. Previously indication has been given to presence of oil in commercial quantities in four of the eight sedimentary basins that extend into parts of British Honduras, Costa Rica, Guatemala, Nicaragua, and Panama.

"TRAILERMAST"

RIG UP AND TEAR DOWN IN MINUTES, NOT HOURS . . .

SELF-SUPPORTING. GUY LINES FOLD WITH MAST . . .

ALL WHEELS ON GROUND—NO RAMP REQUIRED

NOTE: *Portable, One-Piece Substructure.*

CARDWELL

REG. U. S. TRADE MARK PAT. OFFICE

THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

CARDWELL MFG. CO. INC.

P. O. Drawer 2001 . . . Long Distance Telephones 128—129—130

Cable Address: "ALL STEEL," Wichita — "CARDSTEEL," New York

Wichita, Kansas, U. S. A.

TWENTY-FIVE YEARS CARDWELL SERVING THE OIL INDUSTRY

Cuba . . . Search for new petroleum deposits fail to pay off but 1952's drilling program shows more promise.

WHILE THE SEARCH for new petroleum deposits in Cuba last year again failed to find additional commercial production, results of the year's drilling program were more encouraging than in recent years. Several traces of oil were reported in test wells. The drilling campaign planned for the current year gives indication of being the broadest of recent times.
and one was abandoned as dry.

1952 was less than 100,000 barrels, the lowest level since prewar years. A total of 10 wells was drilled for approximately 20,200 feet of hole resulting in four small oil producers in proved areas and six dry or abandoned wells. The various drilling programs for 1953 indicated that at least five wildcat tests are to be drilled plus additional field wells.

Principal operations in 1952 were in the Jarahueca field, a 1943 discovery, in Las Villas Province. Four wells were completed at depths ranging from 2400 to 2800 feet. Each is producing from eight to 10 barrels daily of 38 gravity oil. Total production of the field in 1952 amounted to 48,000 barrels. Two wells were drilled in this field early in 1953 to depths of 2500 and 2700 feet, respectively, and one was abandoned as dry.

Trinidad . . . 2463 producing wells yield 20,462,182 barrels of oil . . . a drop of 70,187 barrels from 1951. 182 completions hike footage 37 percent.

TRINIDAD'S 2463 PRODUCING wells yielded 20,462,182 barrels of crude oil last year, 70,187 barrels less than 1951's 2151 wells produced. Completed during the year were 182 wells for a 37 percent increase in footage drilled. The 177 oil wells and five dry holes resulted in a total of 736,535 feet drilled in 1952. In 1951, 113 oil wells, 1 gas well and 7 failures resulted in total footage drilled of 538,-884 feet.

While extensive search for new deep oil reservoirs was continued throughout the year without marked success, exploratory efforts were not entirely without reward. They led to the discovery by United British Oilfields of Trinidad of a new shallow field near Mayaro. The field is believed capable of producing a total of about 10 million barrels. A second shallow field was discovered by Trinidad Petroleum Development Company near Moruga beach. The successful completion of wells deviated under the sea from shoreline location. Trinidad Petroleum now obtains more than half of its total production from such wells.

No actual marine location was drilled during 1952, but almost 1 million acres of marine crown oil rights were leased during that time. Seismic surveys have been completed over a large part of the newly-leased area.

Importation of foreign oil for refining exceeded 17 million barrels for the first time, and this figure may increase to the point of equalling domestic crude production. The opening during 1952 of the Trinidad Leaseholds, Ltd., catalytic cracker was an important milestone in domestic refining industry, which now can compete in world markets with the widest range of products.

Interest shown in the colony by a new company, Dominion Oil Limited of Canada, gave considerable impetus to leasing during the year. To date, this new subsidiary of Standard Oil Company of California has acquired leases or made applications on ap-

Drilling in Trinidad

COMPANIES	WELLS COMPLETED IN 1952					WELLS COMPLETED IN 1951				
	Oil	Gas	Dry	TOTAL Wells	TOTAL Footage	Oil	Gas	Dry	TOTAL Wells	TOTAL Footage
Trinidad Leaseholds, Ltd.	51	0	0	51	160,831	37	0	2	39	162,795
Antilles Petroleum Co. (Trinidad, Ltd.	13	0	2	15	55,457	17	.....	.....	17	56,276
Trinidad Petroleum Development Co., Ltd.	34	0	1	35	160,023	2	.....	.....	2	20,971
Apex (Trinidad) Oilfields, Ltd.	11	0	1	12	71,926	*18	1	2	21	119,737
Kern Trinidad Leaseholds, Ltd.	11	0	0	11	43,299	9	.....	1	10	40,489
United British Oilfields of Trinidad, Ltd.	42	0	1	43	183,019	30	.....	2	32	138,616
Siparia Trinidad Oilfields, Ltd.	7	0	0	7	38,754	.....	.....	.....	.....	.....
Trinidad Central Oilfields, Ltd.	5	0	0	5	17,072	.....	.....	.....	.....	.....
Premier Consolidated Oilfields, Ltd.	3	0	0	3	6,154	.....	.....	.....	.....	.....
Total	177	0	5	182	736,535	113	1	7	†121	538,884

* Included are 9 wells situated in Quarry field which is operated by Apex (Trinidad) Oilfields, Ltd., and Trinidad Petroleum Development Co., Ltd.
† Not included were 17 wells (16 oil wells and 1 dry hole, with a footage of 76,728 feet) drilled in Palo Seco field which is operated by Trinidad Leaseholds, Ltd., and Trinidad Petroleum Development Co.

Oil Production in Trinidad

COMPANIES	Total Producing Wells End of 1952	CRUDE OIL PRODUCTION (Barrels) Year 1952	Year 1951	Cumulative Through 1952
Trinidad Leaseholds, Ltd.	628	6,131,633	7,940,671	169,030,839
Antilles Petroleum Co. (Trinidad), Ltd.	113	670,248	602,851	9,356,938
Trinidad Petroleum Development Co., Ltd.	347	3,289,432	1,716,121	48,677,176
Apex (Trinidad) Oilfields, Ltd.	340	3,218,732	4,183,458	96,204,405
Kern Trinidad Leaseholds, Ltd.	146	856,569	707,196	16,361,796
United British Oilfields of Trinidad, Ltd.	497	5,261,514	5,382,072	98,574,643
Siparia Trinidad Oilfields, Limited.	60	528,401	.....	n.a.
Trinidad Central Oilfields, Limited.	146	118,863	.....	n.a.
Premier Consolidated Oilfields, Limited	184	379,456	.....	n.a.
Golden Petroleum Company	2	7,334	.....	n.a.
Total	2,463	20,462,182*	20,532,369	438,205,797

* Included is 204,502 barrels of condensate: Trinidad Leaseholds, Ltd., 6,588 barrels; Trinidad Petroleum Development Co., Ltd., 83,608 barrels; Apex (Trinidad) Oilfields, Ltd., 114,306 barrels.

GM DIESEL
CASE HISTORY NO. 534-142

OWNER: Atkins and Pannell Drilling Company, Camden, Arkansas

INSTALLATION: GM 6-71 Diesel with torque converter powering National D-12 draw works; "Twin 6-71" driving a Wilson-Snyder 7 x 12 pump.

PERFORMANCE: Engines have operated steadily since June, 1951, without needing any repairs. Rig moved from location to location 40 times last year; takes only half a day to rig up. Operating in the Camden-Texarkana area, drills first 1500 ft. in 7 hours.

It pays to STANDARDIZE on

GM
GENERAL MOTORS
DIESEL POWER

Drilled On 40 Locations In One Year

Here's another drilling contractor who has found General Motors torque converter-equipped Diesels help him make hole faster. First, because of their dependable, quick-accelerating 2-cycle operation. Second, because of their compactness and light weight, which makes them easier to move and easier to set up. These are just two good reasons why more and more drilling contractors are switching to GM Diesel power. For complete information, drop us a postcard or letter asking for the new catalog of General Motors Diesel Oil Field Engines.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.

GENERAL MOTORS CORP., DIESEL ENGINE SALES, PETROLEUM INDUSTRY, 1504 PHILTOWER BLDG., TULSA, OKLAHOMA

ALABAMA—Montgomery 1
ALABAMA MACHINERY & SUPPLY CO.

CALIFORNIA—Bakersfield
LAWLESS BROTHERS

Berkeley
WEST COAST ENGINE & EQUIPMENT CO.

Los Angeles 21
ANDERSON-O'BRIEN CO.

COLORADO—Denver 9
THE COLORADO BUILDERS' SUPPLY CO.

ILLINOIS—Centralia
WESTERN MACHINERY & ENGINE CO.

ILLINOIS—Mt. Carmel
WESTERN SERVICES

KANSAS—Wichita
DIESEL EQUIPMENT CO., INC.

LOUISIANA—Harvey
GEORGE ENGINE CO., INC.

Shreveport
UNITED TOOL COMPANY

MICHIGAN—Detroit 4
THE EARLE EQUIPMENT CO.

MISSOURI—St. Louis 10
WESTERN MACHINERY & ENGINE CO.

MONTANA—Billings
SEITZ MACHINERY CO., INC.

Missoula
MOUNTAIN TRACTOR CO.

NEW MEXICO—Albuquerque
THE HARRY CORNELIUS COMPANY

NORTH DAKOTA—Fargo
SWEENEY BROTHERS TRACTOR CO.

Williston
SWEENEY BROTHERS

OKLAHOMA—Oklahoma City
DIESEL POWER CO.

TEXAS—Brownsville—Corpus Christi—Dallas—Houston—Lubbock—McAllen (San Juan)—Odessa—Wichita Falls
STEWART & STEVENSON SERVICES, INC.

Plainview
DIESEL POWER, INC.

UTAH—Salt Lake City 4
CATE EQUIPMENT COMPANY

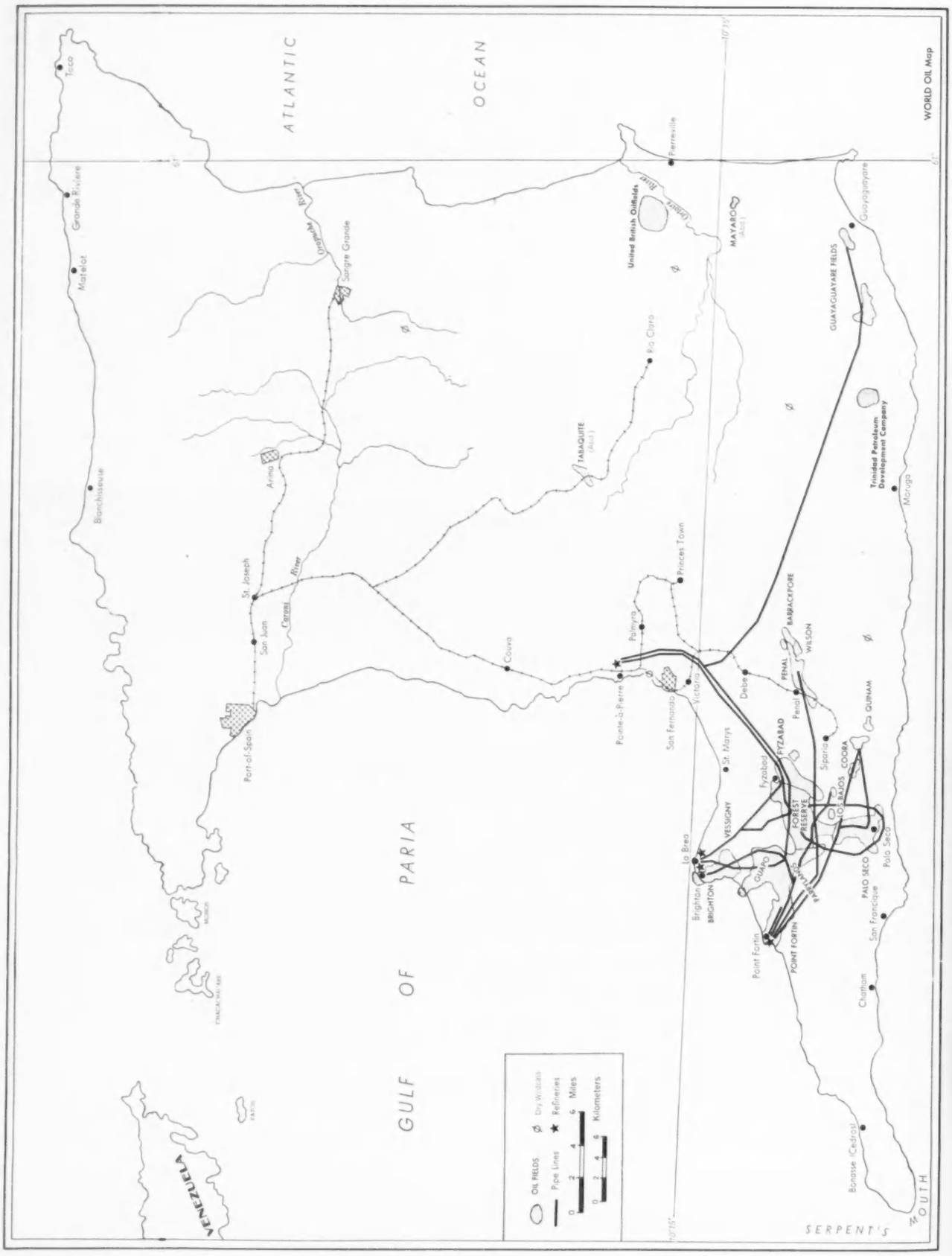
WYOMING—Casper
THE COLORADO BUILDERS' SUPPLY CO.

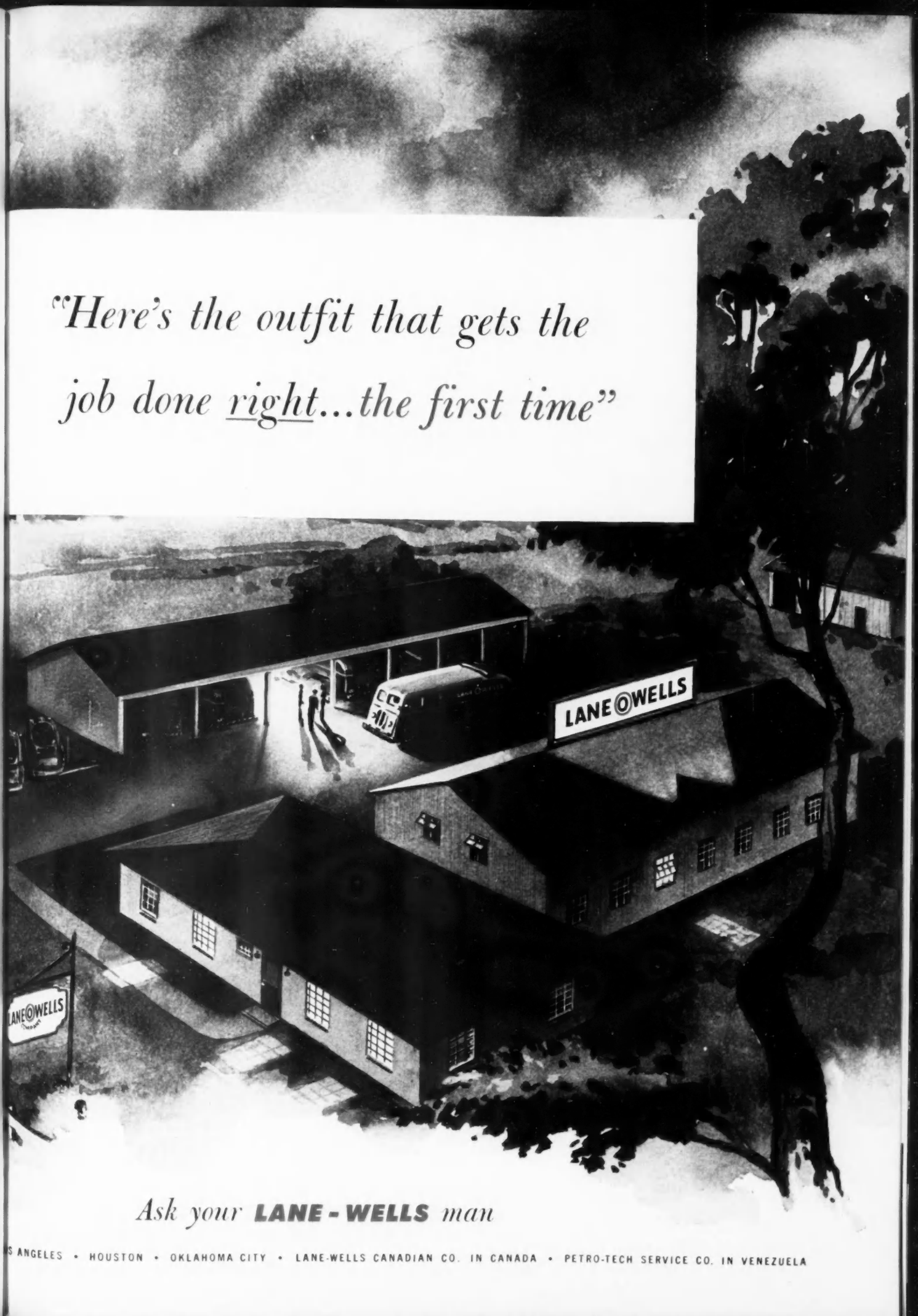
TRINIDAD . . .

proximately 700,000 acres on the island and adjacent sea bottom.

This development stems from a political climate which allows private enterprise activity. While the government owns subsurface oil, the industry is not governed by a government monopoly.

In 1952, Trinidad Leaseholds completed the largest number of wells—51. All were crude producers and total footage amounted to 160,831 feet. United British Oilfields was second in the number of wells completed—43—and first in footage drilled—183,019 feet.




"Here's the outfit that gets the
job done right...the first time"
LANE WELLS
LANE WELLS
Ask your LANE - WELLS man
S ANGELES • HOUSTON • OKLAHOMA CITY • LANE-WELLS CANADIAN CO. IN CANADA • PETRO-TECH SERVICE CO. IN VENEZUELA

Argentina . . . Imports almost equal production. Operations by private capital limited as government-owned companies fail to keep pace. .

ARGENTINA, once able to meet its petroleum requirements from domestic output, imported almost as much crude last year as it produced. Adding required refined products imports, the total was considerably greater than supplies from domestic sources.

Total crude production in Argentina in 1952 was 24,668,152 barrels, while crude imports amounted to 24,190,000 barrels and refined products imports totaled 12 to 13 million barrels. In the postwar period, the nation's domestic crude production increased by 18 percent through last year, while required crude imports nearly doubled.

Such are petroleum industry operations in a dictator country, where operations by private capital are extremely limited and the government-owned companies have been unable to keep close to the rising needs for petroleum. It is a nation where the geological prospects of additional oil discoveries are considered good by competent authorities. Yet, the number of major commercial discoveries made by government operators in the postwar period through mid-1953 can be counted on the fingers of one hand.

While four private capital companies—Astra Cia. Argentina de Petroleo (Argentine capital); Cia Rio Autel "El Sosneado" (Argentine capital); Diadema Argentina S.A. de Petroleo (Royal Dutch-Shell); and Standard Oil Company S.A. Argentina (Jersey Standard)—have continued production operations in the country, the companies have been prohibited from acquiring additional acreage for exploration unless such should be acquired under a jointly-owned company with the government. None has been formed.

Largest Producer. Yacimientos Petroliferos Fiscales (YPF), the government-owned company is the largest producer. The government acquired additional production in early 1948 when it absorbed the former private capital company, Cia. Ferrocarrilera de Petroleo. Output of the latter last year amounted to 518,738 barrels, nearly 80,000 barrels less than in 1951.

Results of such a government hold over the petroleum industry can be noted in the production trend in Argentina in the postwar years (see Table 1). Output of YPF and Cia. Ferrocarrilera has shown a small increase annually, while the combined output of the private capital companies continues to show a natural decline since no new sources can be tapped by these companies on their overworked restricted acreage. As shown, the government's share of production last year rose to 80 percent of the total, while that of private capital companies continued to decline.

Total production last year, while a postwar high was 3.1 million barrels under the peak of 27.7 in 1943, and showed a gain of only 260,909 barrels over the output in 1951. It was the smallest year-to-year increase since 1949. The government's production in 1952 advanced 704,000 barrels, but was offset considerably by the decline from the fields produced by private capital companies.

While Argentina is in great need of additional domestic crude to reduce the foreign exchange requirements for imported petroleum, YPF in the postwar years through mid-1953 made only five known important commercial discoveries. These are Cutral-Có (Neuquén Province) in 1950; Campo Durán (Salta) in 1951; Pampa Palauco (Mendoza) in 1951; Cerro Bandera (Neuquén) in 1952; and Madra Jones (Salta) in 1953. There have been no commercial discoveries by private capital companies since the San Pedro and Ramos fields in 1928, though the latter was not produced commercially until 1937 upon the completion of Well 8 as a commercial producer.

With this record, it is understandable why there were reports from Argentina early in 1953 that President Juan Peron's economic advisors recommended that private foreign capital be allowed to participate in developing new petroleum supplies within the nation. The economic advice came with the announcement of the start of Peron's second five-year plan which calls for the investment of 33.5 billion pesos ($2360 million) in industrial and agricultural development by the end of 1957.

Peron reportedly was told that such an undertaking could not be accomplished without the aid of private foreign capital. What the final decision will be is uncertain, but the Peron anti-American campaign picked up since this report was made, so apparently there is only a small chance for a change in Argentina's petroleum restrictions in the near future.

TABLE 1
Government Vs. Private Capital Oil Production in Argentina
(Production in Barrels)

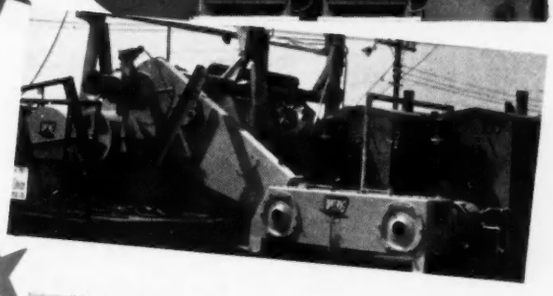
YEAR	Yacimientos Petroliferos Fiscales & Cia Ferrocarrilera de Petroleo[1] (Both Government—Owned)		Four Private Companies[2]		Total Production
	Annual Production	Percent of Total	Annual Production	Percent of Total	
1946	14,213,865	68	6,588,535	32	20,802,400
1947	15,257,754	70	6,588,097	30	21,845,851
1948	17,343,912	74	5,908,814	26	23,252,726
1949	16,934,301	74	5,660,918	26	22,595,219
1950	17,972,285	76	5,389,416	24	23,361,701
1951	19,146,613	77	5,260,570	23	24,407,183
1952	19,850,859	80	4,817,293	20	24,668,152

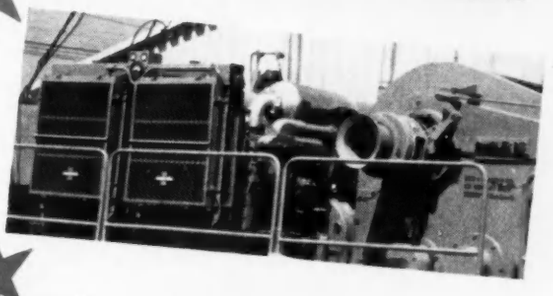
[1] Cia. Ferrocarrilera, once a private company owned by British National Railways of Argentina, was absorbed by the government in March, 1948. Commencing with 1948 its production is shown as government-owned.
[2] Private capital companies operating in Argentina are: Astra Cia. Argentina de Petroleo (Argentine capital); Cia-Rio Autel "El Sosneado" (Argentine capital); Diadema Argentina S.A. de Petroleo (Royal Dutch-Shell); and Standard Oil Company S.A. Argentina (Standard of Jersey).

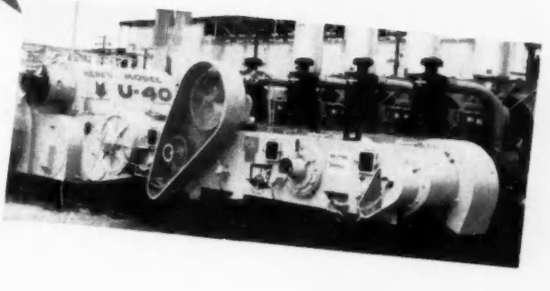
CUMMINS ENGINES

FEATURED AT THE 1953 OIL SHOW

Cummins Dependable Diesels were a feature attraction in many of the 1953 Oil Show Exhibits . . . featured on drawworks, pumps, trucks and many other applications. Features of Cummins Dependable Diesel Power make it extremely adaptable for export use . . . Inquire about truly Dependable Diesel Power —Cummins—today!







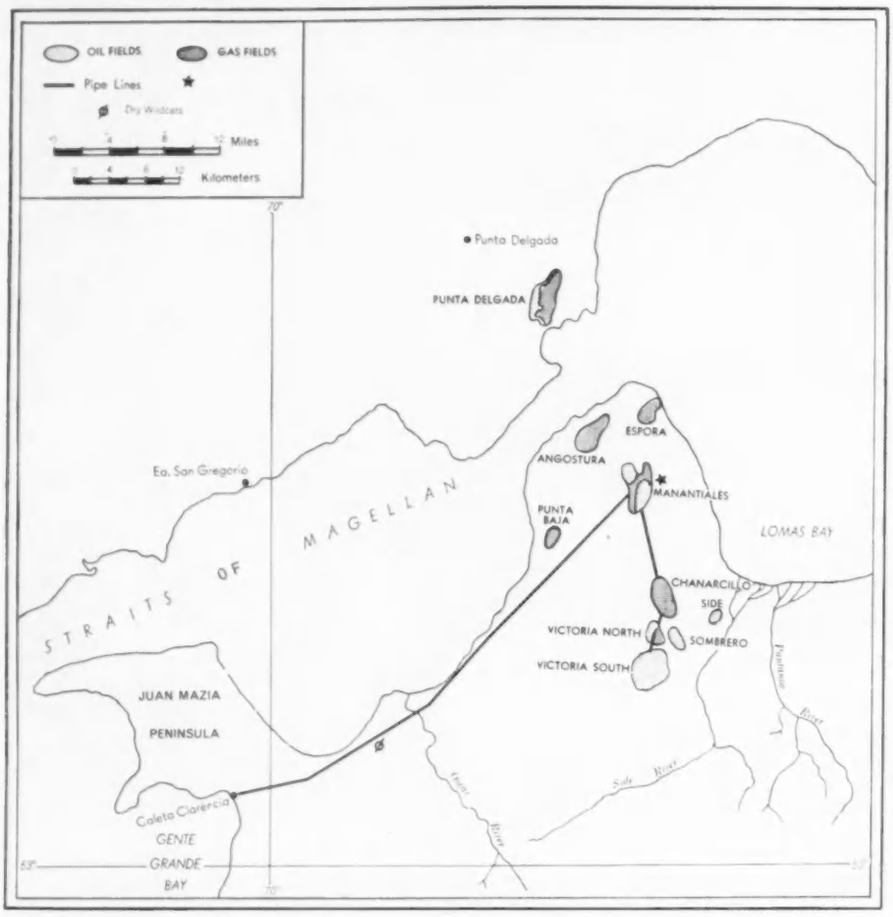
MID-CONTINENT CUMMINS EXPORT CORPORATION

CUMMINS ENGINES *Export Sales and Service*

42 BROADWAY, NEW YORK, N. Y., U.S.A.

CABLE ADDRESS "MIDCUMPORT NY"

OFFICES:
LOS ANGELES, CALIF.
HOUSTON, TEXAS
SAN ANTONIO, TEXAS
NEW ORLEANS, LA.
TULSA, OKLAHOMA
FORT WORTH, TEXAS



Chile . . . increases 1952 production by 20 percent.

13 Magallanes wells in production at close of '52.

EMPRESA NACIONAL DEL PETROLEO (ENAP), Chile's oil administrative monopoly which was organized in 1950, proved itself superior to the government's Corporacion de Fomenta, which it superseded, for the second consecutive year. ENAP increased production in 1952 to 909,773 barrels, up 150,063 barrels or 20 percent from 1951.

The Chilean oil agency was able to increase its production largely through the increase in the number of producing wells. At the close of last year, 13 wells were in production in Magallanes oil area, which consists of six producing regions—Cerro Manantiales, Victoria Sur, Sombrero, Chanarcillo, Victoria Norte and Espora. At the same time the previous year, only ten wells were producing.

Twenty-nine Magallanes wells were completed during the year, with a footage total of 213,480 feet. Fifty-seven wells were completed in 1951, and 15 in 1950. Of the completions last year, 12 found oil, 7 were gassers and 10 were failures.

A gasoline plant at Manantiales (Tierra del Fuego) was completed in 1952, and began operating in July. A refinery at Concon (Valparaiso) is under construction and is scheduled to be completed by mid-1954.

The nation's cumulative production of 2,354,648 barrels at the close of 1952 has all been obtained from the Springhill sand of the Cretaceous. Well depths range from a minimum of 6900 feet to the top of the pay to a maximum of 7600 feet to the bottom of the pay.

Need Extra Copies of This Issue?

A limited number of extra copies of this issue were printed and may be obtained for $1 a copy. Send your order and remittance to:

WORLD OIL
Department 715
P. O. Box 2608
Houston 1, Texas

Bolivia . . . Nationalists eye foreign oil capital

IN 1952 BOLIVIA's petroleum industry produced 529,000 barrels, for a daily average yield of 1445 barrels. This was tantamount to a 2.9 percent increase in production from the previous year when 514,000 barrels was produced from a daily average output of 1404 barrels.

Long pointed out as a land-locked land of latent wealth, this mountain republic late in 1952 found itself with a nationalistic revolutionary government at the end of a lengthy struggle. Officials immediately nationalized the country's large tin companies, one of the major nationalization moves since Mexico expropriated all foreign oil companies in 1938.

At the same time, the nationalists spoke of providing means of drawing foreign oil capital into the nation to explore the petroleum prospects of the Chaco region, long viewed as a potentially "hot" area.

Yacimientos Petroliferos Fiscales Bolivianos, the government's oil monopoly, has controlled the country's petroleum industry since 1937. Camiri field, Bolivia's most prolific oil-producing area, is operated by YPFB.

In mid-1953 the government granted concessions, including a 70,000-acre block in the Los Monos district, to Glenn McCarthy of Houston. YPFB in 1950 completed an oil well in the Los Monos district, which was shut in. Included in the McCarthy concession was a 900,000-acre block of unexplored land lying in the Agua Salado district. All McCarthy's concession areas are situated in southeast Bolivia.

through the earth — every year

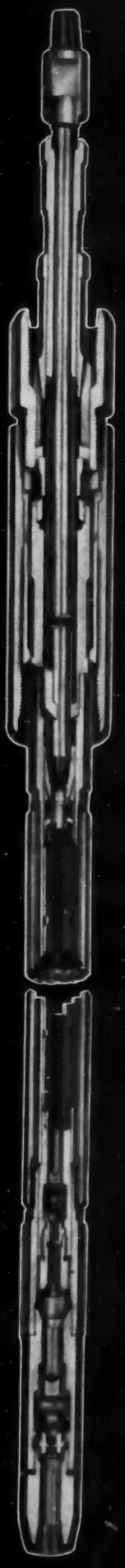
INCREASE b/d

WITH AXELSON PLUNGERS

During the course of a year, a plunger, in a pumping well, may be expected to travel three times the distance through the earth. Axelson plungers provide the high quality necessary for positive performance under these severe conditions and are typical of all Axelson products.

The *pin end* design, for example, is Axelson developed and patented. Externally threaded, its construction maintains uniform outside diameter from end to end, providing good protection against the introduction of abrasive material between the plunger and liner walls. Chrome plating or hardened steel wearing surfaces make this plunger ideal for use where abrasion is severe. Ask an Axelson expert to recommend and install the right combination of Axelson pumping equipment for your well condition.

Send for Bulletin No. 5005 describing the complete Axelson plunger line.



AXELSON "RLA" ROD LINER TYPE, WITH STATIONARY BARREL

There is an Axelson deep well plunger pump for every specific well condition.

AXELSON *Chosen first . . . to last!*

PETROLEUM PUMPING EQUIPMENT

PSC

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

AXELSON MANUFACTURING COMPANY — Division of Pressed Steel Car Company, Inc. • PLANTS — Los Angeles 58, California; St. Louis 16, Missouri. • OFFICES — New York City 7, New York; Tulsa 1, Oklahoma; Buenos Aires, Argentina. • DISTRIBUTORS — Jones & Laughlin Steel Corp., Supply Division; Industrial Agencies Ltd., San Fernando, Trinidad, B. W. I.; Industrias Waldrip & Campbell, Barcelona, Caracas and Maracaibo, Venezuela; Sociedad Comercial de Materias Primas Limitado, Rio de Janeiro, Brazil; Dominion Oil Field Supply Co., Ltd., Calgary, Canada.

PR 23

Shell Oil Company Photo

MUNICIPAL SCHOOL in the oil town of Barrancabermeja, Colombia, site of Empresa Colombiana de Petroleo's refinery.

Colombia . . . Friendly laws encourage oil operations. Production passes 24 million barrels. 68 wells completed during 1952.

COLOMBIAN CRUDE production climbed in 1952 to 24,354,222 barrels for a daily average production of 66,542 barrels. In 1951, the nation produced 23,694,824 barrels—659,398 barrels or 2.8 percent less. Cumulative production at the close of 1952 amounted to 513,427,709 barrels.

Sixty-eight wells were completed during 1952 with the drilling of a total of 333,017 feet. In 1951, 34 wells were completed with a footage of 217,020 feet.

Petroleum operations in Colombia have continued advancing under basically favorable laws that have encouraged private capital operation. Reversion of the former De Mares Concession, which was held by International Petroleum Company, Ltd., in August, 1951, to the Colombian Government for operation by a government company, Empresa Colombiana de Petroleos, has even given the government a more realistic view of petroleum industry operations.

Complete freedom has been enjoyed by companies in exporting crude oil with no obligation to bring back dollar exchange, except in periods of unfavorable balance of payments. And recourse to such emergency measures has been taken only once—in 1948. Then, the government lived up to its promise to reimburse oil companies the dollars brought back to Colombia.

In September, 1952, the government took a further step in favor of the oil industry by issuing a legislative decree of which one of the principal provisions is that pipe lines built under its terms will not be subject to reversion to the nation. The decree also established more liberal provisions for laying pipe lines in the remote regions.

Another provision exempts drilling rigs for exploratory work from import duties. Another abolished the limit of 494,000 acres that had been the maximum area of a concession for any one company.

Despite such a liberal approach toward industry, there are many requirements which are considered unfavorable. The most important is the law requiring import duties on oil field equipment (other than wildcat rigs) brought into Colombia by companies. A 1951 tariff greatly increased oil field equipment import levies.

Texas Petroleum Company completed a 42-mile, 4-inch and 6-inch crude pipe line of 4500 barrels daily capacity during 1952 and it went into operation in April. The line transports crude from Texas' Velasquez field in Boyaca Department to the International Petroleum (Colombia) Ltd. refinery at La Dorado. Shipments through this line in 1952 totaled 812,830 barrels.

Scheduled for completion in 1953 is a pipe line being built by the Colombian Ministry of Petroleum. This 90-mile, 6-inch products line will connect Puerto Berrio with La Dorado.

Colombian Oil Production

COMPANY	NUMBER OF PRODUCING OIL WELLS			CRUDE OIL PRODUCTION (BARRELS)			Cumulative Through 1952
	Flowing	Art. Lift	Total	Daily at End of 1952	Year 1951	Year 1952	
Colombian Petroleum Company	76	103	179	26,978	10,103,735	10,181,934	83,656,051
Texas Petroleum Co.	*15	....	15	4,439	n.a.	1,379,500	n.a.
Empresa Colombiana de Petroleos	n.a.	n.a.	1,061	n.a.	13,591,089	12,792,788	429,771,658
International Petroleum Company, Ltd.	2	....	2	.....	.....	.....	†
Total	93	103	1,257	31,417	‡23,694,824	‡24,354,222	513,427,709

* None active, 6 producible.
† Testing.
‡ Government figures show production of 38,398,000 barrels for 1951 and 38,983,000 barrels for 1952; however, WORLD OIL was able to account for only the figures used in the above table on basis of Company reports.

Drilling in Colombia

COMPANIES	WELLS COMPLETED IN 1951				Wells Completed in 1952	Footage Completed in 1952
	Producing	Dry	Total Wells	Total Footage		
Colombian Petroleum Co.	12	1	13	83,769	18	79,151
Texas Petroleum Co.	n.a.	n.a.	9	59,678	17	132,669
Empresa Colombiana de Petroleos	n.a.	n.a.	10	55,650	29	87,889
International Petroleum Co., Ltd.	1	1	2	17,923	4	33,308
Total	13	2	34	217,020	68	333,017

7 good reasons

WHY THERE ARE FEWER FISHING FAILURES TODAY!

If you're looking for operating safety and efficiency in fishing tools . . . safety that eliminates risky twisting strains, dangerous overloads — efficiency that puts maximum working effectiveness on the fish . . . Bowen Tools are your outstanding value for any job!

Year in and year out these tools have cut fishing failures to the bone . . . have been field-proven under the hardest service for all kinds of fishing jobs and all kinds of conditions.

No. 1 No. 2 No. 3 No. 4 No. 5 No. 6 No. 7

No. 1: Bowen Internal Cutter—Lathe-precision cuts without chattering or crawling make this tool ideal for all cut and pull jobs on drill pipe, casing or tubing. No tricks or dangerous operations required. Positive action permits multiple cuts to be made without removing tool. **No. 2: Bowen Releasing Overshot**—Easy to use—catches drill pipe, coupling or tool joint without changing slips or adjusting. Spiral grapple cinches tighter as pull increases and gives a full-length positive grip. Sets and releases **to the right**, instantly and safely. **No. 3: Bowen Releasing Socket**—A sturdy outside fishing tool for any job such as twist-offs where a positive, rugged hold is required, and long hours of hard jarring are necessary. Releases with some nonfailing action as Bowen Spear. Packoff provided if desired. **No. 4: Bowen Junk Basket**—Deflection of fluid from hole wall to center of tool, coupled with reverse circulation, washes all junk **into** the basket instead of forcing it away. **Uses full pump pressure.** A real tool for hole straightening and core recovery operation, as well as for fishing. **No. 5: Bowen Safety Joint**—A **safe** safety joint for all drilling and fishing operations. Delivers full torque capacity of the string **in either direction**, releases only on definite mechanical actions. Simple construction—only two pieces—eliminates extra parts. **No. 6: Bowen Releasing Spear**—For cutting and pulling casing, drill pipe or tubing, setting liners, etc. Has only six sturdy parts, thus insuring ruggedness and trouble-free operation. Releasing mechanism **has never been known to fail** even under the toughest conditions. **No. 7: Special Bowen Rotary Jar—A straight pull** fishing jar that requires no torque in the drill string for operation and can strike as many as ten blows **per minute** with safety. Incorporates means for varying intensity of blow **without coming out of the hole.**

Why not get acquainted with the complete Bowen line now by writing for your copy of the latest Bowen Catalog or referring to your Composite Catalog. Do it today!

SR BOWEN CO

MAIN OFFICE AND PLANT:
11008 SOUTH NORWALK BOULEVARD
SANTA FE SPRINGS, CALIFORNIA
EXPORT OFFICE:
30 ROCKEFELLER PLAZA
NEW YORK CITY, NEW YORK
EXPORT REPRESENTATIVE: VAL. R. WITTICH, JR.

Brazil . . . new laws nationalize industry.

At the close of 1952, the Brazilian Congress was engaged in creating the Brazilian Petroleum Corporation (Petrobraz), whose purpose is to trade in national oil that is still in the earth.

In October, 1952, President Getulio Vargas closed the door to foreign companies and pushed through the House of Deputies the legislation that put Brazil in the oil business.

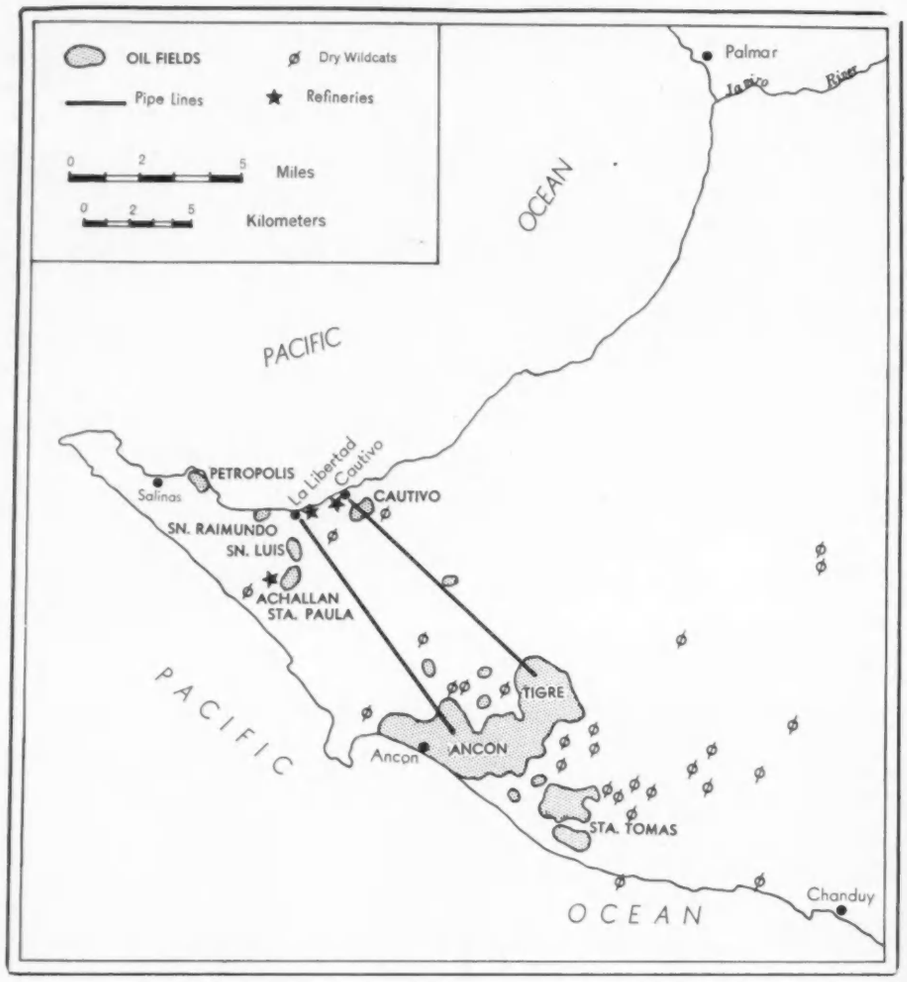
Partial reports on 1952 oil activity showed that production amounted to 664,830 barrels for a daily average of slightly more than 1831 barrels. This was approximately the same figure recorded for 1951. Wells spudded in 1952 totaled 54; wells completed 58; total footage was 125,326.

Under the new Brazilian law, sole exceptions to a complete state monopoly in the petroleum industry is the authorization permitting previously-granted refining concessions to native-born Brazilians to continue. These concessions cannot be renewed however, and at their termination Petrobraz is authorized to take over the plants.

The move has been opposed in some quarters in Brazil. One source claimed Petrobraz and the refineries will find there is not enough domestic petroleum to keep them busy. This source said there was plenty of oil in Brazilian subsoil but the country lacks the know-how and financing to extract it.

Brazil is setting up several refineries in its expansion program. Mataripe refinery commenced operation in September, 1952, with capacity of 25,000 barrels daily. Throughput was expected to increase 100 percent. Cubatao refinery in Sao Paulo, designed to handle 45,000 barrels daily, is scheduled to be operating in 1954.

One refinery at Capuava, also in Sao Paulo, is designed for 20,000 barrels, and Manguinhos refinery in the Federal District, will handle a crude throughput of 10,000 barrels daily. Both were scheduled to begin operation this year. Another refinery with 40,000-barrel capacity has been proposed for a site near Rio de Janeiro. All will be cracking plants.



Ecuador . . . daily average output of 7936 barrels boosts 1952 total to 2,904,473.

Ecuador crude production for 1952 totaled 2,904,473 barrels, 188,918 barrels, or 7 percent, more than the output for 1951. This yield resulted from a daily average production of 7936 barrels from 1143 producing wells, and it pushed Ecuador's cumulative production to 54,660,044 barrels. As of Jan. 1, 1953, proved crude reserves were put at 23 million barrels.

Indicating the degree of freedom with which private capital companies are allowed to operate in Ecuador is the number of wells completed in 1952—135, all in Guayas Province. Total footage drilled during the year was 233,953. In 1951, 54 wells were completed, with a footage of 192,468.

During the year, Anglo-Ecuadorian Oilfields, Ltd., was able to maintain an intensive drilling program. Ninety holes were drilled. Eighty of which were for exploratory purposes, for total footage of 150,672. For 1953, Anglo-Ecuadorian has scheduled a drilling program calling for 206,500-foot total for both shallow and deep holes.

Anglo-Ecuadorian also plans to construct a 10-inch pipe line to carry crude to tankers for export. This pipe line will replace a 10-inch line which has been abandoned. A 2-inch pipe line will be built to carry natural gasoline from Ancon field to Puerto de La Libertad.

Ecuadorian oil is important. Geographically, it is the only oil between Peru and Los Angeles basin in California. Since Ecuador's oil does not have to pass through the Panama Canal, its production is of increasing importance in view of troubled world conditions.

Except for aviation, Ecuador's well-integrated oil industry has put the

ECUADOR . . . .

nation in the position of a net exporter. The operating companies are meeting the refining, transportation and marketing needs of the republic.

Production is obtained from the Santa Elena Peninsula. The producing areas are about 90 miles west of Guayaquil, the principal port and commercial city. All but about 3 percent of the production comes from the principal fields of Ancon, Tigre and Santo Tomas. All are practically adjacent to the Pacific Ocean. Oil seepages and brea deposits have been known for centuries on the peninsula.

Manabi Exploration Company, Inc., which operates the Tigre-Cautivo field, had at the close of 1952 39 wells along the Pacific seaboard accounting for production of about 1700 barrels a day. These holdings are part of the assets acquired early in 1952 from Ecuador Oilfields, Ltd., by Manabi. Included in these acquired assets were 57,000 acres in the Santa Elena Peninsula area and the Tigre oil field, which had daily production exceeding 1000 barrels at the time of the purchase.

Also, Manabi has exploratory concessions on about 1.5 million acres along the Ecuadorian coast where wildcatting operations in 1953 were scheduled in the Engunga area, approximately 30 miles southeast of Santa Elena.

Drilling in Ecuador

PROVINCE	WELLS COMPLETED IN 1952					WELLS COMPLETED IN 1951				
	Oil	Dry	Gas	TOTAL Wells	TOTAL Footage	Oil	Dry	Gas	TOTAL Wells	TOTAL Footage
Guayas	....	....	....	135	233,953	54	....	....	54	192,468
Total	....	....	....	135	233,953	54	....	....	54	192,468

Oil Production in Ecuador

PROVINCE	Total Producing Wells End of 1952	CRUDE OIL PRODUCTION (Barrels)			
		Daily Average for 1952	Year 1951	Year 1952	Cumulative Through 1952
Guayas	1,143	7,936	2,715,555	2,904,473	54,660,044
Total	1,143	7,936	2,715,555	2,904,473	54,660,044

International Petroleum Company Photo

THIS MODERN SUPERMARKET is operated by the International Petroleum Company at Talara, Peru.

Peru . . . Cooperative government and likely prospects are drawing foreign know-how into country. Production in 1952 totals 16,403,353 barrels.

PERU IS BOOMING. A friendly government and undeveloped oil prospects are drawing foreign oil companies and their technical know-how into the remote jungle areas as well as onto the great coastal plains. This upsurge in activity stems directly from passage on March 12, 1952, of the new petroleum law which opened the country to private industry.

After issuance of the regulations and prior applications of national companies, which were limited to a maximum of 10 percent of each of 152 blocks into which the Sechura area was divided, 13 companies applied for concessions on October 28. Included among these companies were nine foreign firms. Sought by the 13 companies were concessions covering practically the entire prospective area of around 4 million acres.

As the year closed, Peru looked back on 1952 production of 16,403,353 barrels, not including 1,035,615 barrels of natural gasoline and 144,030 barrels of liquefied petroleum gas. The nation's 2998 producing wells accounted for a daily average of 38,-

Oil Production in Peru

DEPARTMENT	Total Producing Wells End of 1952	CRUDE OIL PRODUCTION (Barrels) Daily Average for 1952	Year 1951	Year 1952	Cumulative Through 1952
Huanuco	6	461	168,656	200,045	1,182,572
Piura	2,966	38,254	14,001,144	16,182,261	429,759,467
Tumbes	26	54	19,907	21,047	3,731,737
Total	2,998	38,769	16,109,896	16,403,353	434,673,776

Drilling in Peru

DEPARTMENT	WELLS COMPLETED IN 1952 Oil	Gas	Dry	TOTAL Wells	Footage	WELLS COMPLETED IN 1951 Oil	Gas	Dry	TOTAL Wells	Footage
Huanuco	....	....	....	....	....	....	....	....	....	....
Piura	157	3	75	235	621,657	131	....	87	218	838,216
Tumbes	....	....	2	2	7,973	....	....	2	2	4,972
Organos	....	....	1	1	11,545	....	....	....	....	....
Loreto	....	....	1	1	9,000	....	....	....	....	....
Total	157	3	79	239	650,175	131	....	89	220	843,188

769 barrels for the year, and increased cumulative production to 434,673,776 barrels. In 1951, 16,109,896 barrels had been produced.

Production. Piura Department accounted for a wide majority of 1952 production, just as it did the previous year, with a yield of 16,182,261 barrels from its 2966 wells. Huanuco's six wells produced 200,045 barrels and Tumbes' 26 wells produced 21,047 barrels.

A total of 239 wells were completed last year—235 in Piura, 2 in Tumbes, and one each in Organos and Loreto. Of Piura's 235 wells, 157 found oil, three were completed as gas producers and 75 were failures. The four remaining wells were dry holes.

Total footage for 1952 amounted to 650,175, compared to the 843,188 feet resulting from the 220 wells completed during the previous year, when 131 found oil and 89 were failures.

New activity is expected in the Montaña, the Peruvian Amazon basin east of the Andes. The Ganso Azul field was acquired by Texas Gulf Producing Company of Houston. The company proposes to develop the field by opening new wells, constructing a pipe line 48 miles long to Pucallpa, and introducing shipping facilities for transporting the crude to Manaos, in Brazil, where the construction of a 5000-barrel-a-day refinery is projected by Brazilian interests.

The national El Oriente Company, which drilled a new wildcat at Pisqui river to a depth of about 9000 feet, took 1.7 million acres of new concessions; the Canadian company, Peruvian Oils and Minerals Ltd., applied for about a million acres, and recently The Texas Company applied for a concession of the maximum 2.47 million acres in the northern area of the Montaña. Union Oil Company acquired a 500,000-acre Sechura desert concession in December.

New exploration wells were drilled by Empresa Petrolera Fiscal in its concessions along the coast at Carpitas, near Punta Bravo. One well was drilled to about 2300 feet and the second to 5673 feet. The small new Punta Bravo field produced 815 barrels during the year.

In Organos, two deep exploration wells were drilled—one to 4184 feet and the other was drilling ahead at 7360 feet.

You guess . . . we can't!

10 YEARS AGO *THIS FAMILIAR SILHOUETTE ON THE OIL FIELD HORIZON WAS EASILY DISTINGUISHED AS A*

LUFKIN

TODAY . . . *MUCH CLOSER SCRUTINY IS NECESSARY TO IDENTIFY THE MANUFACTURER OF THIS PUMPING UNIT*

DO NOT BE MISLED BY APPEARANCE

SEE OUR CATALOG IN THE COMPOSITE CATALOG

"Look beneath the surface; let not the several quality of a thing nor its worth escape thee"..... *Marcus Arelius*

Lufkin **FOUNDRY & MACHINE COMPANY**

LUFKIN, TEXAS

Branch sales and service Houston, Dallas, New York, Tulsa, Los Angeles, Seminole, Oklahoma City, Corpus Christi, Odessa, Kilgore, Wichita Falls, Casper, Wyoming, Great Bend, Kansas, Effingham, Illinois, Duncan, Oklahoma, Brookhaven, Mississippi

Lufkin Equipment in CANADA is handled by

THE LUFKIN MACHINE CO., LTD., 14321 108th Avenue, Edmonton, Alberta, Canada.

SCALE MODEL of Venezuela's Avenida Bolivar shows how it will look upon completion. Much of the work has been done on this project, one more example of how private capital enterprise benefits a nation which allows it to flourish.

Photo by Hamilton Wright

Private Capital Oil Companies Help a Nation

FIRST-CLASS HIGHWAYS are among the many benefits to Venezuela. This bridge across the Unare River on the Guarico highway was built by Creole Petroleum Corporation with participation of other interested oil companies.

Creole Petroleum Corp. Photo

Venezuela . . . produces its seven billionth barrel of oil . . . but production in '53 lags as rising surplus cuts down on market outlets.

VENEZUELA, THE SECOND largest oil-producing nation and the largest exporter of petroleum, produced its seven billionth barrel early in 1953, but while many other nations were continuing to set new crude production records, this year's output from Venezuela is running 4 percent behind the peak reached in 1952.

Mounting surplus production in the world, particularly the rise of the Middle East production in the postwar period, has curtailed the market outlets for Venezuela's oil. Just prior to World War II petroleum exports from Venezuela went to nearly every consuming area in the world and averaged a half million barrels daily. The Middle East at that time exported about 250,000 barrels per day. Last year, however, while Venezuela's total petroleum exports were nearly 1.5 million barrels daily, the several producing nations in the Middle East shipped 1,825,000 barrels into world trade.

Venezuelan oil, once a substantial supplier to the Eastern Hemisphere, has been all but squeezed out of this market. And while in prewar 1938, Venezuelan crude oil and refined products accounted for 90 percent of the total petroleum imported into the U. S., last year crude oil and refined products derived from Venezuelan crude accounted for no more than 70 percent of the U. S. total petroleum imports. In turn, 68.5 percent of all Venezuelan imports came from the U. S. Venezuela has increased its position in other South American markets, but this has been more than offset by losses elsewhere and will find a further reduction in 1954, when the full impact of the new west-east Interprovincial pipe line in Canada takes a bite into the market for Venezuelan oil in that nation.

Venezuela has a greater dependence on the oil industry than any other industrialized nation in the world. About 62 percent of the government's budget is derived from oil production and the industry employs about 50,000 Venezuelans. From its oil revenues, the government, through the Venezuelan Development Corporation, has embarked on a vast diversified industrial and agricultural program; it has developed a public health service; built roads and provided many new schools.

Some of the loss of revenues from the voluntarily reduced production in 1953 (see Table 1) will be offset by the higher posted prices for Venezuelan crude oil ranging from 10 to 30 cents a barrel that became effective June 23, a week after similar increases were posted in the U. S. Southwest and Mid-Continent fields.

The present supply and demand situation in world oil trade does not guarantee that higher prices for crude oil will last. Middle East oil producers have captured the Eastern Hemisphere markets from Venezuela, and the competition among the various Middle East producers to hold their positions in these markets could bring some price trimming such as occurred at the start of 1953, defeating the present firmer Middle East price structure.

In addition to the advantage Middle East producers have in the Eastern Hemisphere markets, they also have a slight edge over Venezuela in shipments to the East Coast of the U. S. with present low tanker rates. A return to the former higher tank ship rates would knock out this advantage but the trade does not anticipate higher ocean tanker rates in the near future.

Economic Problem. Venezuela's present position in world petroleum trade presents an economic problem that has no easy solution. Venezuela, however, is at least partly to blame for its predicament. Right after the war, oil companies operating in Venezuela and possible new entries into the Venezuelan industry were clamoring for new acreage to take under concession. The government, at the time fearing possibly a decline in world oil demand following the war and the risk that additional producing concessions would flood available markets, reducing prices and the government's 50 percent share in each company's profits, refused to grant additional concessions. It hasn't granted any yet.

The oil companies still interested in new areas to explore then moved on to Western Canada, where the boom was getting underway, and to the Middle East. While they maintained Venezuelan operations and continued exploratory operations on the available acreage (exploration, drilling and production were at new highs last year), greater efforts were expended in other parts of the world. Total acreage under concession in Venezuela at the end of last year was down to 15.5 million acres from about 16 million a year previous, or less than one-fifth of the total area of Venezuela considered favorable for oil exploration.

Despite its long delay in granting new concessions—in face of new promises almost every year to do so—every present producer and numerous new ones would like additional acreage. If for no other reason, the normal decline from present fields eventually will force a reduction in revenues from oil for the government unless the producers can continue to find new sources.

Until 1953, the pace of the industry in Venezuela continued unabated, however. Total production was 660.2 million barrels, for a daily average of 1,803,910. Drilling and exploration reached new highs and total exports were at a peak of 625,783,530 barrels.

Venezuela is not a "cheap" oil nation and production and operating costs there are comparable to those in the U. S. The nation also receives at least 50 percent of the profits of each producing company (which when compared to the basic 52 percent corporate income tax rate in the U. S. before excess profits taxes is not excessive). Venezuela, however, does offer oil producers a comparatively stable nation near consuming markets of the

Western Hemisphere. It proved a valuable source of oil for the Allies in World War II and its industry would be ready should a similar emergency strike the world again.

While some concern was created by the last November elections in Venezuela, the results of the election, confusing to many observers outside of Venezuela, made Col. Marcos Pérez Jiménez first the provisional president and later the constitutional president of the Republic of Venezuela (this name was adopted last May) for a four-year term ending in 1958. Since 1948, Col. Pérez Jiménez had been one of the Military (later called Government) Junta that ruled the country prior to the 1952 elections. During his executive service, he has stood for industrial and social development in Venezuela.

New Highs in 1952. Exploratory, drilling and production operations were at new highs during 1952 in Venezuela. The 1952 production of 660,222,569 barrels (1,803,910 barrels daily) represented a gain of 6.1 percent over 1951, compared with a 14 percent gain in 1951 over 1950. The output last year brought Venezuela's cumulative production for the country since the start of commercial output to 6,824,422,503 barrels with the 1952 production amounting to 9.1 percent of the cumulative.

Venezuela's crude oil reserves were increased by 1,050,396,600 barrels during 1952, based on the official estimate of the Ministerio de Minas e Hidrocarburos, giving a net increase of 389,967,600 barrels after deducting 1952 production. The nation's reserves as of January 1, 1953, were placed at 9,453,569,400 barrels, or about 8 percent of the world's total estimated crude oil reserves. (WORLD OIL for February 15, 1953, estimated Venezuela's crude oil reserves as of January 1, 1953, at 9.6 billion barrels.)

Production at the end of the year came from 8594 wells, an increase of 692 over the end of 1951. (Details on production, producing wells and results of drilling are shown in Table 1.)

Drilling operations resulted in the completion of 1313 wells, an increase of 107 over 1951, with the three operating subsidiaries of the Royal Dutch-Shell Group completing 612, or 46 percent, of the total drilled. Mene Grande completed 231 net wells and Creole completed 225. Of the total drilled, 1161 were oil producers, 27 produced gas and 125 were dry. At the end of the year 116 active rigs were in operation, compared with 98 the previous year, and at a recent date in 1953 the number of rigs running had been stepped up to 122.

Exploratory drilling continued to be more active in Eastern Venezuela than in other parts of the country and resulted in 18 new discoveries in the states of Anzoategui and one in Guarico in Eastern Venezuela, and one discovery in Zulia in Western Venezuela.

Exploration parties on surface geology, structural drilling, seismograph, gravity meter and magnetometer surveys in 1952 averaged 34.17 crews per month, compared with 32.10 crews in 1951.

Repressuring Operations. One of the most important field developments in Venezuela in 1952 was projects planned or completed for the use of gas production for repressuring operations. Constructive use of gas in Venezuela has long been a problem due to the lack of industrial outlets. Two pipe line projects were completed to make gas available as fuel for several industrial areas. The largest part of the gas produced, however, will eventually be used in repressuring operations to increase recovery and extending productive life of Venezuela's oil fields.

Seven projects for use of field gas, in addition to the two pipe lines for industrial fuel sales in Venezuela, were started or completed in 1952. Largest of these is Creole's pressure maintenance plant being built on a concrete platform seven miles offshore in 60 feet of water in Lake Maracaibo. The plant when completed by mid-1954 will compress 137 Mmcf. of gas daily for injection into the Eocene reservoir and will utilize an additional 15 Mmcf. of gas daily as fuel.

Creole completed its Quiriquire gas compressor station in 1952 and it delivers 11 Mmcf. of gas daily through a 21-mile, 20-inch pipe line to the company's Caripito refinery, releasing for sale 1400 barrels of fuel oil daily. Creole has ordered equipment to increase gas injection pressure at Quiriquire in order to evaluate a pilot program for pressure maintenance in reservoirs deeper than those into which gas has been injected previously.

Creole also completed expansion of its Jusepin pressure maintenance plant from 25 Mmcf. to 40 Mmcf. daily to provide additional gas lift and pressure maintenance. This plant recovers 1000 barrels of gasoline daily.

TABLE 1
Crude Oil Production and Drilling in Venezuela in 1952

	1952 Production (Barrels)	Producing Wells End of 1952	DRILLING				
			Oil	Gas	Dry	Total Wells	Footage Drilled
EASTERN VENEZUELA:							
Mene Grande Oil Company (Gulf)	78,757,089	884	185	6	29	220	1,812,789
Creole Petroleum Corporation (SONJ)	61,710,486	1,045	71	3	10	84	546,795
Socony-Vacuum Oil Company	21,249,456	173	54	1	5	60	458,050
S.A. Petrolera Las Mercedes (Texas Co., Carcas Pet.)	9,163,879	195	29	..	17	46	639,162
Venezuelan Atlantic Refining Company (Atlantic Refining)	6,355,452	141	19	1	17	37	147,566
Venezuelan Petroleum Company (Sinclair)	4,742,421	181	17	..	4	21	146,113
Texas Petroleum Company (Texas Co.)	3,765,184	48	6	3	1	10	391,259
Phillips Oil Company	3,508,351	62	21	2	3	26	169,549
Pantepec Oil Company	3,147,888	113	2	11	2	15	23,288
Other Companies	2,220	....	2[a]	..	6[b]	8	33,345[c]
EASTERN TOTAL	192,402,426	2,842	406	27	94	527	4,376,086[d]
WESTERN DISTRICT:							
Creole Petroleum Corporation	234,960,455	1,395	132	..	9	141	692,881
Shell Venezuelan Oil Concessions, Ltd.	164,627,356	3,164	519	..	11	530	1,561,844
Shell Caribbean Petroleum Company	31,063,413	440	64	..	4	68	292,764
Mene Grande Oil Company	20,256,400	518	8	..	3	11	39,431
Richmond Exploration Company	7,148,112	42	22	..	1	23	186,216
The Colon Development Company (Shell)	6,241,458	134	8	..	..	8	47,250
Texas Petroleum Company	3,179,582	6	1	..	1	2	23,000
Talon Petroleum C.A.*	343,367	53	1	..	2	3	4,095
WESTERN TOTAL	467,820,143	5,752	755	..	31	786	2,851,658[e]
TOTAL VENEZUELA	660,222,569	8,594	1,161	27	125	1,313	7,227,744

* These properties were formly owned by British Controlled Oilfields, Ltd., and were purchased in December, 1952 by a group of American independente including C. W. Murchison, C. V. Hagen, G. L. Ohrstrom and Roy B. Kelly.
[a] Drilled by Shell Caribbean Pertoleum. [b] Drilled by Caracas Petroleum S.A. [c] Of the total shown, Caracas Petroleum, S.A. drilled 20,897 feet and Shell Caribbean drilled 12,448 feet. [d] Included in the total are 8,170 feet drilled by Richmond Exploration Company. [e] Included in the total are 4,177 feet drilled by Coro Petroleum Company.
Source: Ministerio de Minas e Hidrocarburos, Caracas.

Seismograph

:CABLES:

and cable accessories

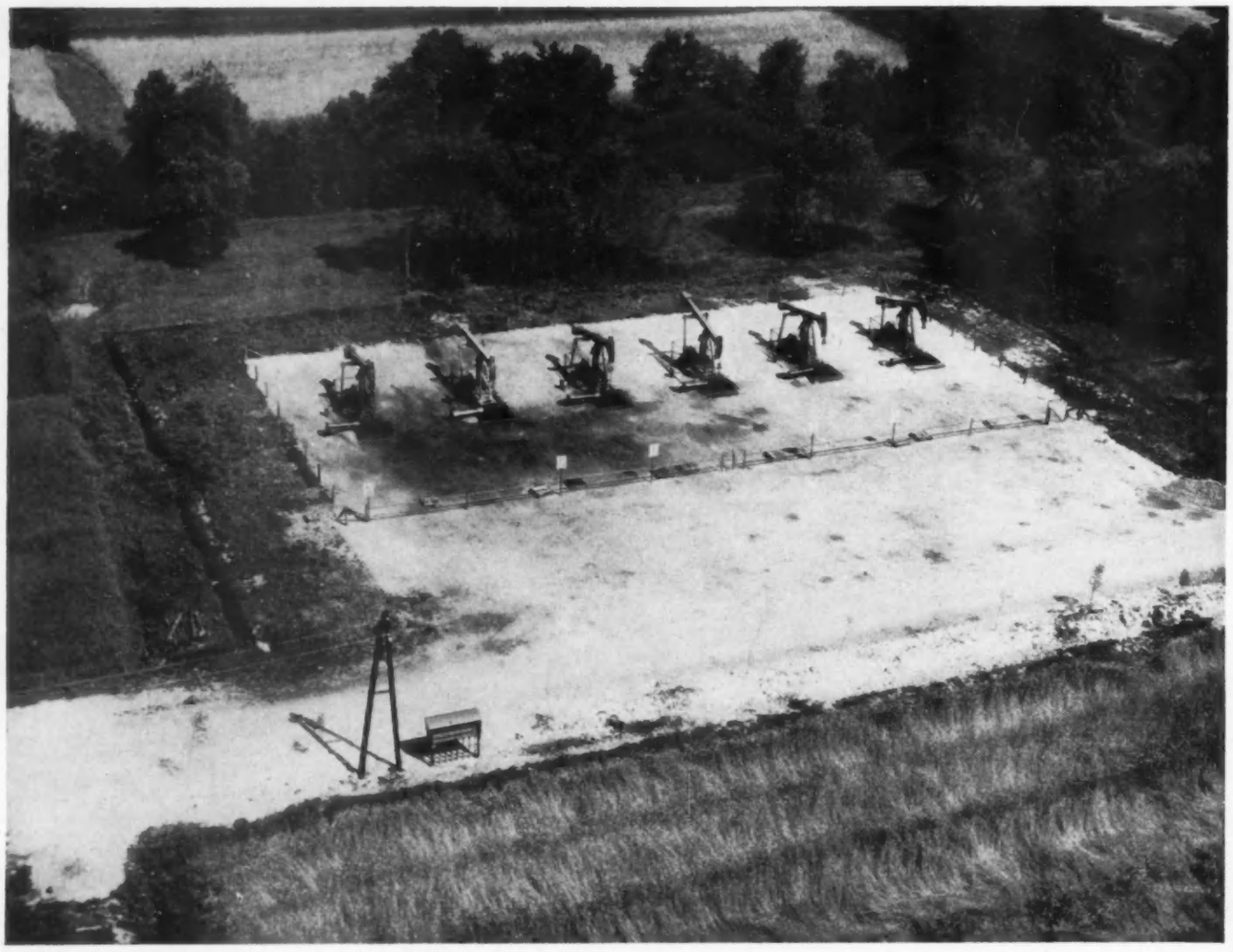
1. MARINE CABLES
2. TRUCK CABLES
3. PORTABLE CABLES
4. MULTIPLE DETECTOR SHOT HOLE VELOCITY CABLES
5. POLARIZED GEOPHONE TAKE-OUTS
6. POLARIZED GEOPHONE CABLE CLIPS
7. GEOPHONE WATER SEAL MOLDS
8. SEISMIC CABLE HANDLERS

All types of geophysical cables and cable accessories made to specifications for use all over the world.

WRITE FOR COMPLETE ILLUSTRATED CATALOG

Vector MANUFACTURING COMPANY

5616 Lawndale · Houston 23 · Texas



MULTIPLE WELL PLATFORM in Emsland oil field at Ruehlertwist, which is situated in a moor area.

Germany . . . Production in 1952 jumps 31 percent to more than 12 million barrels. Sights set on 15 million barrels of crude during 1953.

GERMANY ROLLED UP a marked increase in crude production during 1952. With total output of 12,463,552 barrels, production was 31 percent greater than that for the previous year. With 2317 wells producing at the close of the year, Germany accounted for a daily average yield of 34,054 barrels in passing the 10 million-barrel-a-year mark by a wide margin. Cumulative production was boosted to 108,873,816 barrels.

Up during 1952, too, went the number of oil well completions—307 in all, or a 19 percent hike from the 259 oil wells completed the previous year. Dry holes numbered the same as in 1951—126, while four gas wells were completed last year as compared to two the previous year. Total number of wells completed—437—accounted for an 18 percent increase from 1951.

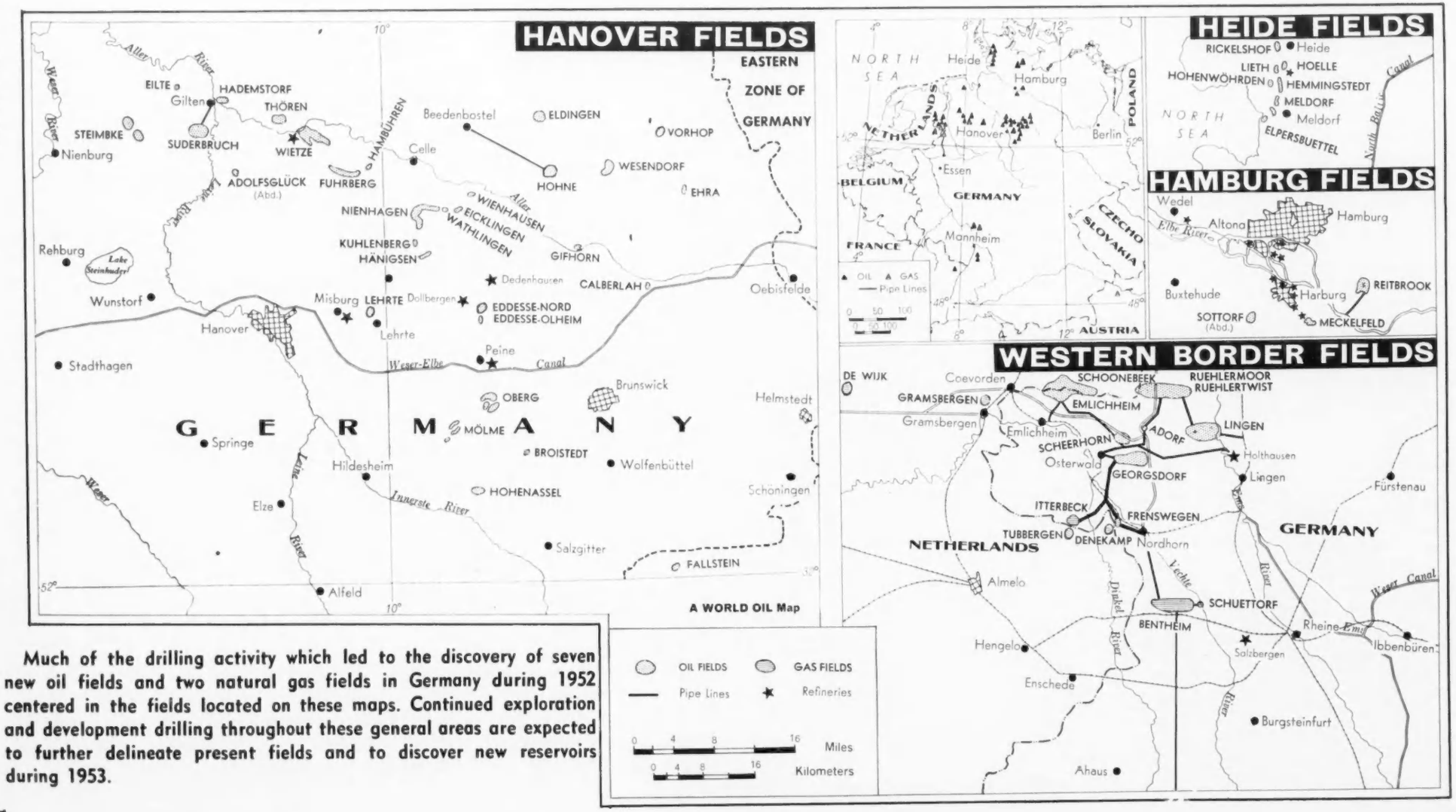
The resultant increase in footage from 1951, 442,698 feet, pushed the total for the year to 1,529,684 feet, or 41 percent greater than footage drilled in 1951.

Therefore, it appears that Germany will reach an output of approximately 15 million barrels of oil this year and 20 million barrels in the next few years. And further development will be backed by more than 100 active deep drilling rigs and about 35 geophysical teams.

New Fields. In 1952, Germany's drilling activity, which compares favorably with international standards, resulted in the discovery of seven new oil fields and two natural gas fields. The series of new discoveries and extensions of older oil fields brought about an increase in estimated reserves which totaled 362.2 million barrels as of Jan. 1, 1953. Of this amount, 248,173,000 barrels are proved reserves.

The first new find in 1952 was made in January at Hohenwoehrden, near Heide, where on the deep western flank of the Heide salt uplift oil was encountered in the Wealden (Lower Cretaceous) and Dogger (Jurassic) for the first time in middle Holstein. While this was more or less an extension of the Heide oil field, a wildcat of Deutsche Vacuum Oel AG. (Socony-Vacuum), Boostedt 1, brought an outstanding discovery in

GERMANY---THE NETHERLANDS



Much of the drilling activity which led to the discovery of seven new oil fields and two natural gas fields in Germany during 1952 centered in the fields located on these maps. Continued exploration and development drilling throughout these general areas are expected to further delineate present fields and to discover new reservoirs during 1953.

East Holstein. Former exploration there had been unsuccessful.

On the eastern flank of the elongated salt upthrust, Bramstedt-Boostedt-Wankendorf, the well Boostedt 1 struck oil in the Dogger. Farther north, Deutsche Erdoel-AG was successful with its wildcat Ploen 2 completed in October.

Meanwhile, at both Boostedt and Ploen-Wo Wankendorf more wells came in, and in March, 1953, Boostedt had yielded more than 20,000 barrels and Ploen about 14,000 barrels of crude. These discoveries stimulated the search for oil in Holstein province, and wildcatting was begun at several places.

New Discoveries. Two new finds in Hanover province—at Lehrte, near Hanover, and at Vorhop, near Wesendorf oil field—appear to be of minor importance. However, a striking result was achieved in the area between the Emsland and Hanover province, which is now classified as the separate oil-producing district of Weser-Ems. There, last November, Wintershall AG's exploration well Aldorf 1 struck oil in a sandstone of the Lower Dogger, on the northeastern flank of the Dueste structure.

Meantime, additional wells proved productive. And in April, 1953, the new Aldorf field had yielded more than 10,000 barrels of good quality crude. South of Aldorf, Wintershall AG's wildcat Rehden 5 encountered a gas deposit. Production tests yielded a daily average of more than 3 Mmcf from the main dolomite of the Zechstein.

Need Extra Copies of This Issue?

A limited number of extra copies of this issue were printed and may be obtained for $1 a copy. Send your order and remittance to:

WORLD OIL
Department 715
P. O. Box 2608
Houston 1, Texas

In December, 1952, a remarkable discovery was made in the Upper Rhine Valley graben, where the wildcat Stockstadt 1 of Gewerkschaft Elwerath struck oil in the Pechelbronn beds of the Lower Oligocene, southwest of Darmstadt town. Success of this well is of particular importance because it is the first time that this formation, which is the pay zone in the French Pechelbronn oil field, has been encountered in the Upper Rhine valley this far north. At about the same time, Deutsche Erdoel-AG. found a natural gas deposit at Pfungstadt, east of Stockstadt.

Drilling activities during 1952 have opened new hopes in the search for oil, particularly in East Holstein, in the area between the Weser and Ems rivers, and in the Upper Rhine Valley graben. These three districts have now become centers of exploration.

Refining Increase. During 1952, West Germany's refining industry increased its throughput capacity to 57 million barrels. Two new plants were completed during the year: Ruhroel GmbH. at Bottrop, and Scholven-Chemie AG. at Gelsenkirchen-Buer. Both are hydrogenation works which were previously used in liquefaction of coal. In late 1952, West Germany's first catalytic cracking unit was put on stream in the Heide plant of Deutsche Erdoel-AG.

Anglo-Iranian Oil Company's Hamburg refinery processed 5,071,950 barrels in 1952, as compared with 4,743,000 barrels the previous year. Construction of an additional plant which will increase refining capacity to 9,562,500 barrels annually has commenced. The Oelwerke Julius Schindler refinery processed 1,354,000 barrels of crude, an increase from the 1,147,500 barrels handled in 1951.

Efforts were made in the Russian-occupied eastern zone of Germany to develop crude production. In the old and formerly abandoned oil field of Fallstein, near the West German border, a well was cleaned out and production resumed. Its yield, however, totals amounted to only about 2500 barrels last year.

Gewerkschaft Brigitta (Royal Dutch Shell), which operates at Quakenbruck, Steimbke/Rodewald/Lichtenmoor, Suderbruck, Thoren, Hambuhren, Fuhrberg Ost, and Hemmelte West, reported total footage drilled during the year of 230,781 feet and the completion of 47 wells. Of these completions, 41 were oil producers and six were failures.

The company had 29 flowing wells and 401 pumping wells at year's end. Total crude produced in these fields during 1952 amounted to 1,393,820 barrels, resulting from daily average production of 4316 barrels. Cumulative production up to the end of the year reached 7,831,230 barrels.

Drilling in Germany

REGION	WELLS COMPLETED IN 1952					WELLS COMPLETED IN 1951				
				TOTAL					TOTAL	
	Oil	Gas	Dry	Wells	Footage	Oil	Gas	Dry	Wells	Footage
Emsland	140	2	10	152	487,269	111	2	13	126	361,567
Hamburg	1			1	2,434	4			4	2,647
Hanover	134		65	199	628,440	120		83	204	570,056
N. Rhine-Westphalia			2	2	9,345			2	2	12,642
Schleswig-Holstein	9		15	24	150,698	14		20	24	106,565
Upper Rhine Valley	8	1	11	20	71,632	10		7	17	31,715
Weser-Ems	15	1	21	37	167,677					
Wuerttemberg			2	2	12,189			1	1	1,794
Total	307	4	126	437	1,529,684	259	2	126	378	1,086,986

Oil Production in Germany

REGION	Total Producing Wells End of 1952	CRUDE OIL PRODUCTION (Barrels)			
		Daily Average for 1952	Year 1951	Year 1952	Cumulative Through 1952
Bavaria	2			92	92
Emsland	426	14,694	4,210,864	5,378,165	19,385,137
Hamburg	133	984	332,220	359,977	9,414,078
Hanover	1,518	15,808	4,475,933	5,785,612	80,879,218
Schleswig-Holstein	66	1,599	504,007	585,125	10,508,598
Upper Rhine Valley	144	126		45,958	45,958
Weser-Ems	28	843		308,623	308,623
Total	2,317	34,054	9,523,024	12,463,552	108,873,816

PGAC . . . and PGAC alone . . .

perfected and introduced over 3 years ago the world's only PURE NEUTRON/NEUTRON SIMULTANEOUS RADIATION LOG

Complimented by Imitation . . . . but never equalled

READ WHY HERE!

secondary Gamma Rays-of-capture ONLY (which result from Neutron bombardment of the formation being logged) . . . and it should be remembered that this *secondary* Gamma radiation is the only phenomenon which can be utilized by competitive methods to obtain their Neutron/Gamma logs. It is a scientific fact, however, that the logging of this one phenomenon *alone* is utterly impossible, because two other phenomena are *always* present—and these other two are decidedly detrimental to obtaining an accurate Neutron curve.

The first of these two detrimental phenomena is the *natural* Gamma radiation from the formation being logged. Under normal logging conditions, this *natural* Gamma radiation may be of low magnitude and not present too much of a problem. However, many instances are known where strong *natural* radiation from the formation being logged could overshadow the vital *secondary* Gamma radiation and cause an erroneous log.

The second detrimental phenomenon is the strong, scattered, *primary* Gamma radiation which results from the Neutron source itself, simply because there is always a very strong radiation of Gamma Rays present in the bombardment source. To prevent this strong *primary* Gamma radiation from completely blocking out the *secondary* Gamma radiation — from which the log must be obtained—all competitive Neutron logging instruments are forced to use a shielding between the Neutron bombardment source and the ionization chamber obtaining the phenomenon. And right here another crux of the problem arises!

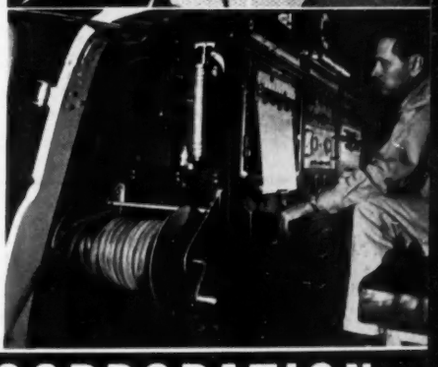
Due to the necessarily limited diameter of the logging instrument lowered into the hole, it is impossible to effect *complete* shielding between the Neutron source and the ionization chamber. Consequently, Neutron/Gamma curves recorded under all competitive methods are affected by this detrimental *primary* Gamma radiation to a greater or lesser extent, *depending upon variations in the size of the bore-hole,* as well as upon other conditions encountered therein. Therefore, and naturally enough, the Neutron/Gamma curve may lack clear definition, and the interpretation of the faulty curve may reflect conditions inconsistent with the true formation facts.

Reasons for PGAC's *Pin Point Accuracy*

Since the exclusive PGAC Slow-Neutron counter is not responsive to Gamma Rays of *any type,* no shielding against them is necessary. And since the PGAC counter is not responsive to Fast-Neutrons either, no shielding is even required against the Fast-Neutrons that may go from the bombardment source directly to the counter. With only those Neutrons which have been slowed down by traversing the formation being detected by the PGAC counter, *the reason* for the clear definition and superiority of our Neutron/Neutron curve becomes obvious.

Because of these many exclusive PGAC features, no other radioactivity log can possibly equal PGAC's SIMULTANEOUS RADIATION LOG. And remember too, only the Perforating Guns Atlas Corporation offers this proved superiority in *Accuracy, Stability, Reliability, and Economy.*

So, play it safe . . . always call in PGAC to run a Radiation Log on your well — you'll get a better log, better service — and you'll save rig down-time!



PGAC-540

PGAC PERFORATING GUNS ATLAS CORPORATION

Houston, Texas Telephone: LYnchburg 4161

General Offices: 3915 Tharp St. — Sales Office: Melrose Bldg. — Main Plant: 7730 Scott St.

PGAC OIL FIELD SERVICES: Simultaneous Radiation Logging — Brons Neutron/Neutron Logging — Electrical Logging — Micro Survey — Bullet Perforating — Jet Shot Perforating — Side Wall Jumbo Coring — Open Hole Jet Shot — All Baker Wire Line Services — 24-Hour Service From All Stations

Canadian Affiliate: PERFORATING GUNS OF CANADA, LTD., Edmonton, Alberta, Canada

Standard Oil Company (N. J.) Photo

GIRLS' SCHOOL at Standard Francais de Petroles' company town of Port Jerome, France. This company which owns a 52,000-barrel-daily refinery is 81 percent owned by Standard Oil Company (N. J.) with minority interest held by the French government, Gulf Oil Corporation and Atlantic Refining Company.

France . . . Lacq field production pushes 1952 total to 2,540,000 barrels. 77 wells completed during year. Footage drilled totals 378,000.

FRANCE ACCOUNTED for a significant rise in oil production during 1952. From an output of 893,100 barrels in 1950 and 2,117,400 barrels in 1951, its yield rose in 1952 to 2,540,000 barrels. This was an increase of 412,320 barrels from the previous year. This marked increase stemmed largely from production of the Lacq oil field in the Aquitaine Basin.

Aquitaine produced 2,130,000 barrels of crude and 9360 Mmcf of natural gas, Alsace Basin yielded 400,000 barrels and Languedoc Basin followed with 10,000 barrels.

A total of 77 wells was completed during 1952, 17 of which found oil, one discovered gas and 59 were failures. Five of the oil wells were drilled in the Languedoc Basin and found small crude production. The single gasser was drilled at Jura to a depth of 20,000 feet. Savoie accounted for one dry hole.

Total footage drilled by the close of the year reached 378,000 feet, with Aquitaine Basin reporting 200,000 feet, Alsace, 80,000 feet, and Jura 20,000 feet.

As these figures indicate, drilling continued on an extensive scale throughout 1952. Twenty-six rigs operated continuously in drilling the 77 wells, each of which had an average depth of 4900 feet. Forty-eight of the wells were exploratory tests. Extension wells were drilled in Lacq, a 1949 Upper Cretaceous discovery, and Gallician fields.

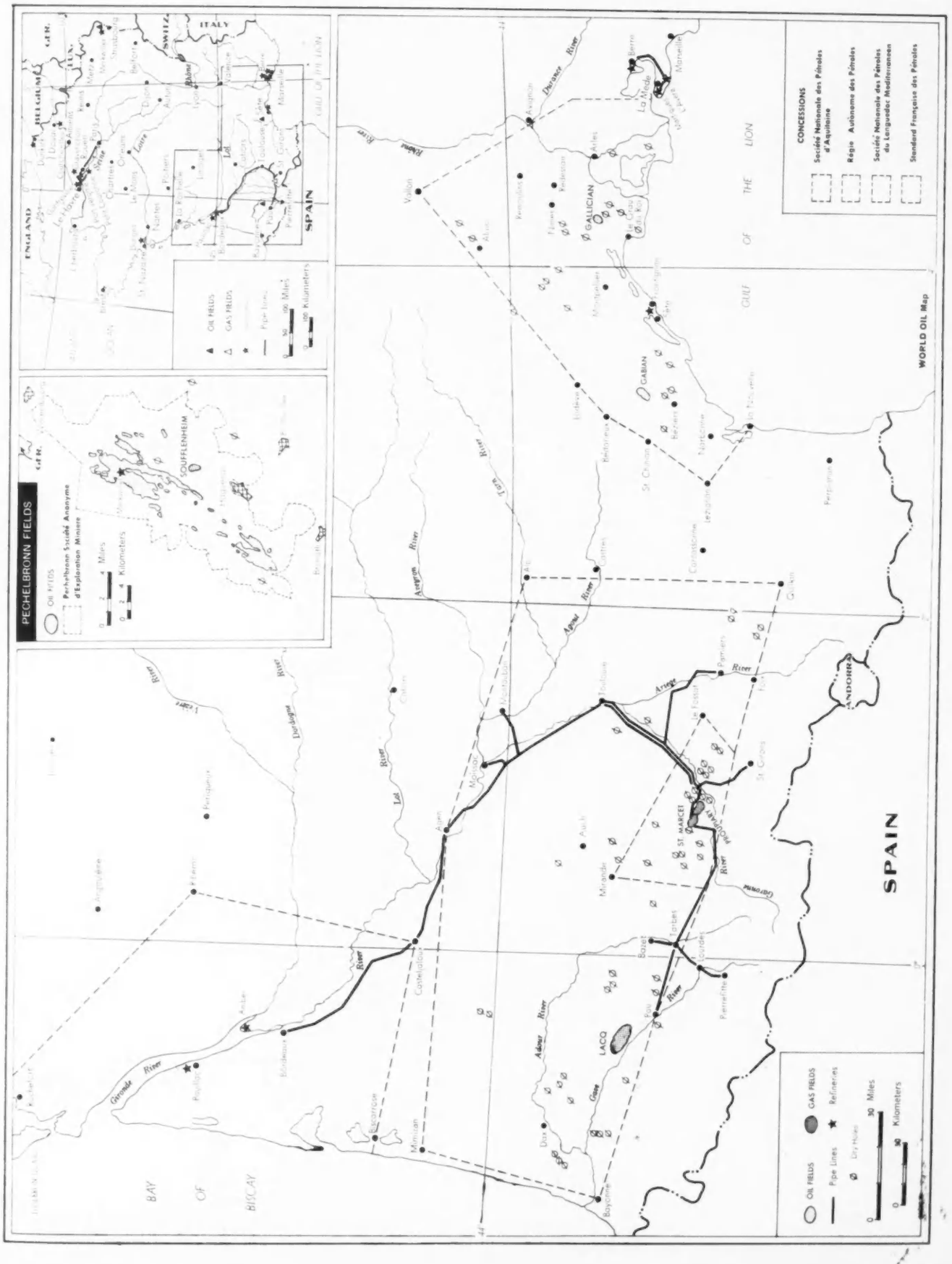
Because of the decline of Pechelbronn fields in the Alsace Basin, producing wells there totaled only 13.

Upper Lacq field is now completely developed, and is credited with a daily average production of 6000 barrels. A positive gas test resulted from a deep well abandoned after shutting in a high-pressure blowout which lasted six weeks. Two rigs about a mile from the discovery well were drilling ahead at the close of the year.

Geophysical operations during the year were intensified with eight seismograph and two gravimeter crews in action. Esso Standard, a subsidiary of Standard Oil (New Jersey) conducted exploration work in its North Aquitaine concession. The company scheduled drilling of its first test well this year.

Also of importance were the oil and gas shows found in the vicinity of Souffleheim (Alsace), where Lias-

FRANCE


PECHELBRONN FIELDS
OIL FIELDS
Pechelbronn Société Anonyme d'Exploration Miniere
SOUFFLENHEIM
Miles
Kilometers
ENGLAND
BELGIUM
SWITZ.
ITALY
SPAIN
GULF OF THE LION
OIL FIELDS
GAS FIELDS
Pipe lines
Miles
Kilometers
CONCESSIONS
Société Nationale des Pétroles d'Aquitaine
Régie Autonome des Pétroles
Société Nationale des Pétroles du Languedoc Mediterranean
Standard Française des Pétroles
WORLD OIL Map
GABIAN
GALLICIAN
LACQ
ST MARCEL
ANDORRA
SPAIN
BAY OF BISCAY
OIL FIELDS
GAS FIELDS
Pipe Lines
Refineries
Dry Holes
Miles
Kilometers

9,000 *

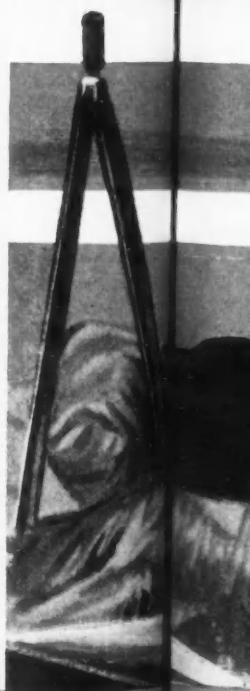
furnish the technological **Know How** for advancing and expanding the dynamic multi-billion dollar manufacture-supply-service industry!

HOW THESE HIGHLY TRAINED SPECIALISTS BENEFIT THE GREAT OIL INDUSTRY...

TO KEEP ahead of the requirements of the gigantic and fast growing oil industry, top managements of the companies serving it have taken the long range view in providing engineering talent that anticipates and meets the demands of unprecedented growth.

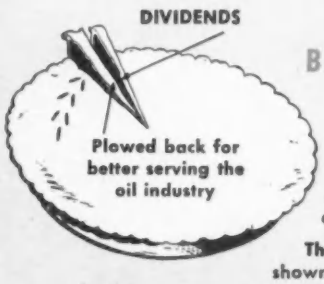
Few machines, even in this machine age, have to operate regularly under such a combination of great stresses, high temperatures, abrasive and corrosive action as do the machines in the petroleum industry. To meet these extreme conditions, scientists, engineers and technologists are regularly producing miracles of mechanics.

Member companies of the Petroleum Equipment Suppliers Association regularly apply practically every branch of scientific knowledge to the solving of their customers' problems having to do with drilling, producing, and servicing.



*** The petroleum manufacture-supply-service industry is in the highest bracket of large industries regularly using a very high percentage of specially trained scientists, engineers, and technicians. Based on estimates made from a recent survey, there are over 9,000 divided as follows:**

765	Research Scientists and Technologists
1840	Development Engineers for both product and service
445	Metallurgists and Technicians in Metallurgy
855	Engineers Engaged in Production Inspection and Final Inspection
5583	Field and Service Engineers

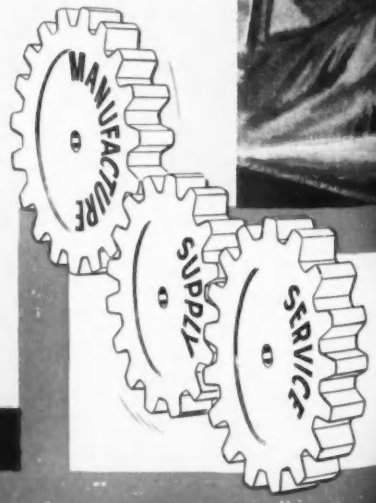


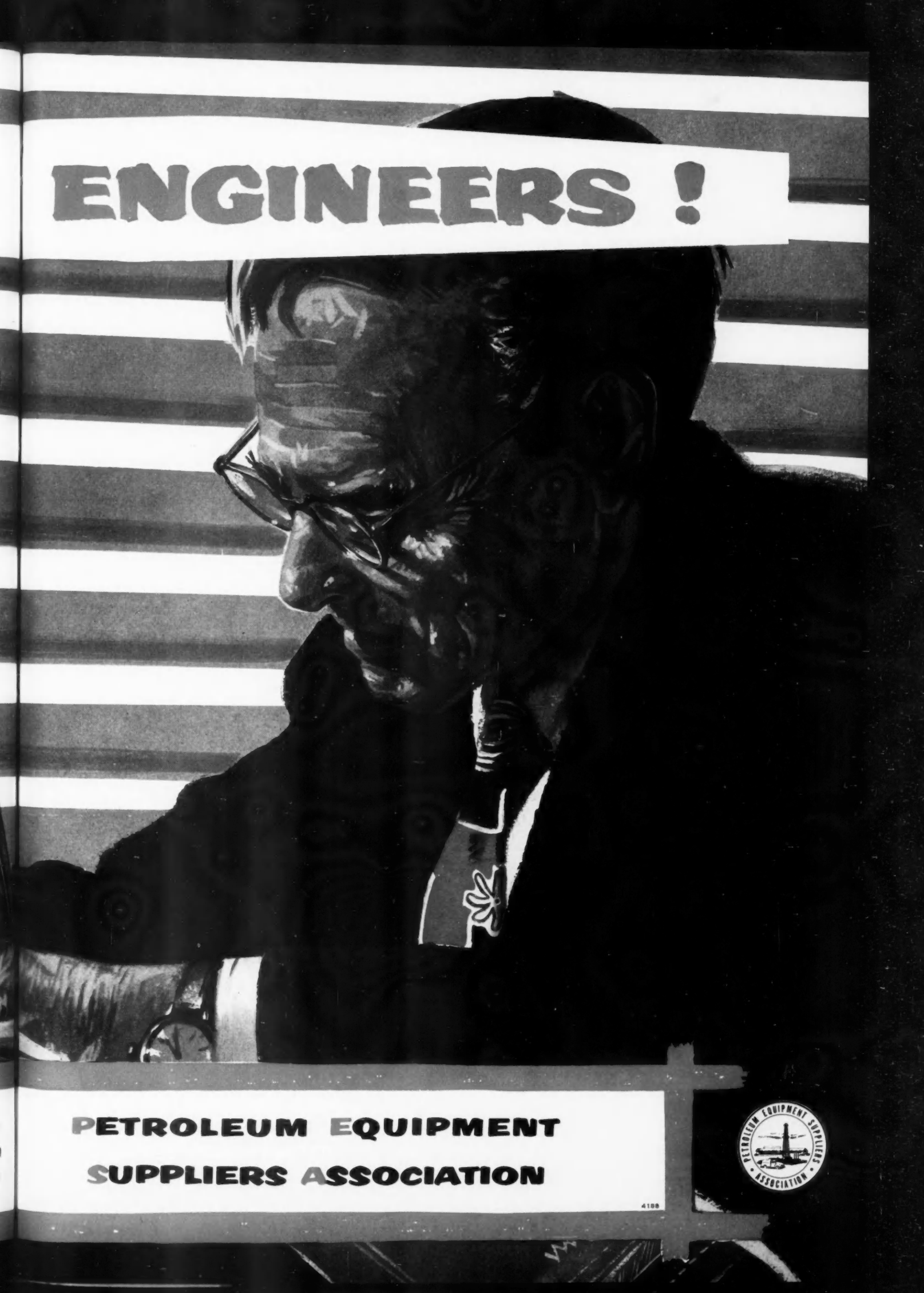
BIG SERVICE FOR A SMALL PROFIT VISION AND FAITH

That the service is big is shown by the heavy investment of manufacture-supply-service companies in scientific and engineering talent, and in billions of dollars in plant and equipment.

That the profit is small and the vision and faith great is shown by: 1. the small average dividends paid — 1.74%; 2. the average earnings plowed back into the building up of the companies in order to better serve the oil industry — 4.76%.

The petroleum manufacture-supply-service industry is truly rendering progressive, intelligent, and conscientious service to one of the world's greatest industries — oil.




ENGINEERS !
PETROLEUM EQUIPMENT
SUPPLIERS ASSOCIATION
PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION
4188

sic beds were found impregnated with crude.

Two oil companies applied for leases during the year in the northeastern part of the Parisian Basin, where a general survey was completed.

In order to promote oil exploration activities, the French government passed a law instituting depletion allowances during the year. In this nation where oil-producing possibilities are considered fair and operations themselves are classed as successful, activity by outside private capital is permitted by concession. The oft-changing regimes in France have had no major damaging effect on petroleum industry operations.

Refining Operations. After years of depending upon imports, France currently is refining almost all its own gasoline. Development of this refining industry has been paralleled by a shift in crude purchases from the New World to the Middle East.

Presently, 90 percent of the nation's imported oil comes from the Middle East and 5 percent from the U. S. Prior to World War II, the Middle east furnished 45 percent and the U. S. 38 percent.

Refineries of Societe Generale des Huiles de Petrole BP showed a substantial increase in throughput. At Dunkirk, 12,844,350 barrels were processed during the year, as compared to 4,720,000 barrels in 1951. At Lavera, throughput increased from 13,877,000 barrels the previous year to 15,766,000 barrels in 1952.

On October 9 Anglo-Iranian Oil Company formally inaugurated its new 40,000-barrel-a-day oil refinery at Dunkirk on the site of the plant that was heavily damaged during the spectacular rescue of the British Expeditionary Force in May, 1940.

The new $50 million plant, the only refinery in northern France, gets its crude from Kuwait. It orginally went on stream in late 1951 with initial production of 8000 barrels a day. Its rebuilding was authorized within the framework of the Monnet Plan, which set for the nation a refining capacity objective of 300,000 barrels daily by 1955. France will have exceeded Monnet Plan quotas by the end of 1953 with production throughput of 400,000 barrels per day.

AN EMPLOYE'S HOME near the Schoonebeck field in The Netherlands. Home was built by N. V. Nederlands Aarodolie Maatschappij, a jointly-owned company of Royal Dutch Shell Group and Standard Oil Company (N. J.).

The Netherlands . . . now a substantial refiner of Middle East oil for local and export markets.

THE NETHERLANDS became an oil nation in the postwar period.

While its indigenous crude production amounts to only 17 percent of domestic requirements, the nation has become a substantial refiner of Middle East petroleum for local and export markets. Its position in international oil trade will be further increased by the end of 1953 with the completion of new facilities that will boost total refining capacity by 65,000 barrels daily or 50 percent.

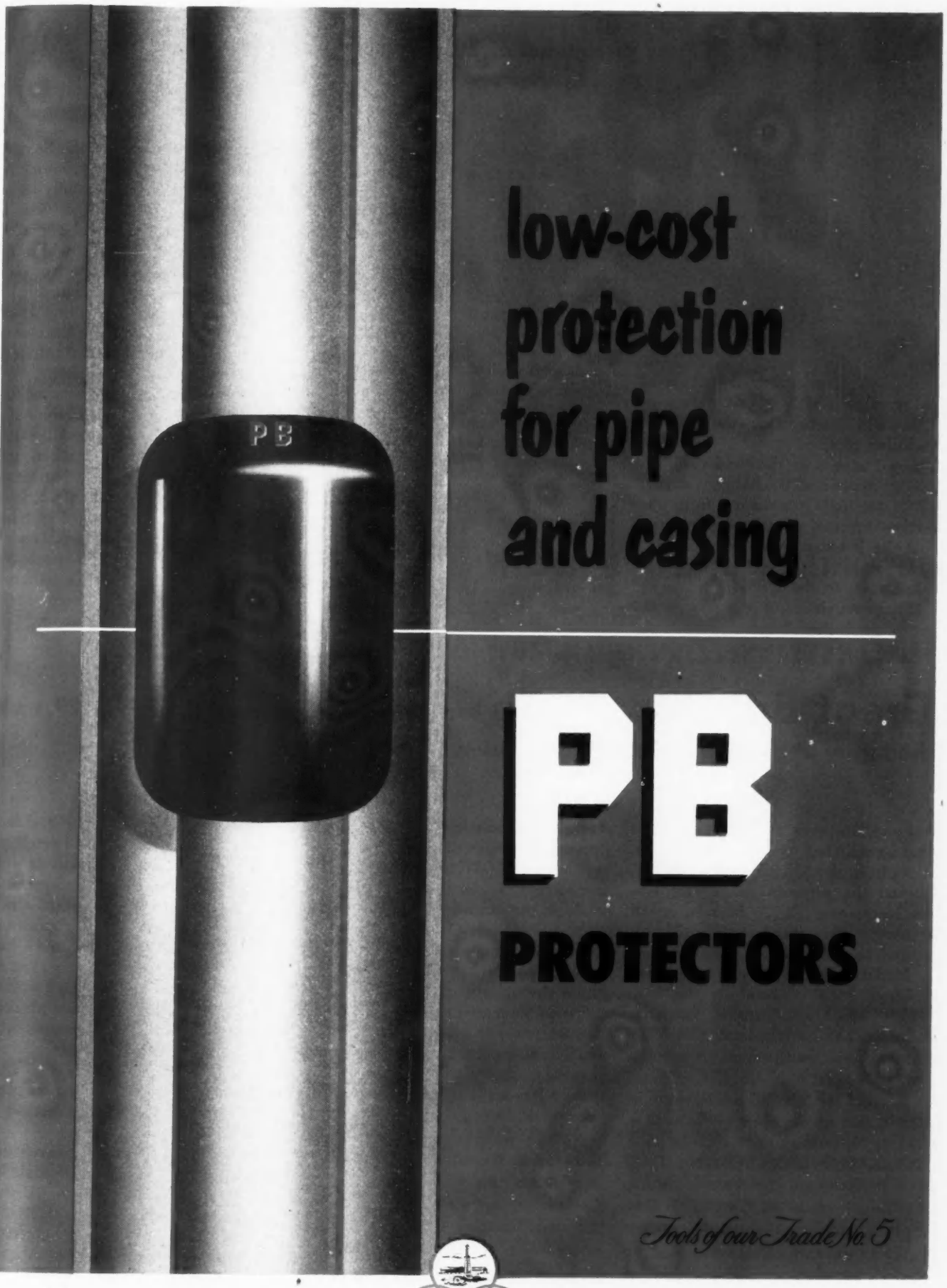
Such a position that has been created within the past decade since the discovery of oil near the German border in 1943, has contributed to the rapid postwar economic recovery made by the Dutch. Crude runs to the nation's two refineries last year averaged 148,000 barrels daily, and after filling domestic requirements of 81,000 barrels daily (including bunker liftings averaging 24,000 barrels daily) a sizable volume was left for export shipment.

Only modest annual increases in domestic petroleum requirements are expected in the near future, which means that the new refinery capacity under construction will be available for output for export trade. The postwar refinery construction in other European nations, with nearly all of them now entering the export petroleum products market, together with the new capacity under construction at Aden, in Australia and India will be a limiting factor on further major increases in Dutch domestic refinery capacity.

N. V. de Bataafsche Petroleum Maatschappij (Royal Dutch-Shell) is the operator of the largest refinery in the country, a 100,000 barrels daily complete plant at Pernis. This refinery will have a 65,000 barrels daily distillation unit ready for operation by the fourth quarter of this year. Caltex Petroleum Maatschappij Nederlands N. V. (California-Texas Oil Company) operates the other refinery, a 28,000-barrels-a-day plant also at Pernis. Both refineries were constructed since the war.

Crude production in Holland comes from the Schoonebeek field, a discovery made near Coevorden during German occupation.

Drilling in the Schoonebeek field was also at a new high last year with the completion of 43 wells.



PB OIL FIELD RUBBER SPECIALTIES

BJ PB

Byron Jackson Co. Since 1872

LOS ANGELES NEW YORK FORT WORTH HOUSTON

Austria . . . Crude production of 20 million barrels claimed in 1952. SMOA drains off bulk of this record output for Russian use.

AUSTRIA'S CRUDE output in 1952 is claimed to have reached the all-time high of 20 million barrels, most of which was appropriated by the Soviet Mineral Oil Administration as the claimed owner of all oil properties and concessions which German firms acquired during World War II in Austria.

From all oil produced in the country, Austria was allocated 7,960,185 barrels of refined products, but could not prevent SMOA's exportation of 12,403,814 barrels for the Soviet's exclusive profit.

Legal aspect of the Soviet oil activities remained unchanged during 1952; the only statements from the Soviets repeated the former viewpoint that the Potsdam Agreement of 1945 gave outright ownership, and not trusteeship, to the USSR.

Their activities for the past seven years, since they began operation of the East Austrian oil fields, have proved that the USSR intends to drain as much Austrian oil as possible for Soviet use as long as Red Army bayonets guard the activities.

Statistics obtained from well-informed Vienna sources put the total amount of crude extracted by the Soviets since 1945 at a minimum of 78,624,950 barrels (see Table 1).

Allocation to Drop. Allocations to Austria are based on domestic economy and are delivered by the Soviets according to SMOA policy, either in full as during 1952 or partially as in the years 1946-1950.

Allocations for 1953 will be smaller than for 1952, against the wishes of SMOA, which wants more Austrian sales due to hesitating foreign sale of Austrian oil products resulting from high prices. But Austria's excessive, almost prohibitive oil taxes and fees limit consumption of products.

With organized development of the Matzen-Prottes field and the discovery of oil deposits in the Adlerklaa area, the Soviets have reached the reported level of 20 million barrels.

Principal production is yielded by SMOA-operated fields, which have no relation to German Assets (under which claim the Soviets normally operate) because these fields were developed only beginning from 1949-1950 under Soviet management.

TABLE 1
Austrian Production From 1944 Through 1952

Year	Barrels
1945	3,733,400
1946	5,742,600
1947	6,292,000
1948	5,973,500
1949	9,503,200
1950	11,064,450
1951	15,951,800
1952	20,364,000
Total	78,624,950

Great Britain . . . 388,500 barrels of crude produced in '52. 229 wells producing at year's end. Refinery expansion top development.

Great Britain's annual crude production climbed to 388,500 barrels in 1952 from the 335,980 barrels yielded during the previous year. This was an increase of 52,520 barrels, or 16 percent. This output shoved the cumulative total to 5,535,500 barrels.

Nottinghamshire, England, contributed 386,000 barrels to the total 1952 output. Lancashire, England, added 1500 barrels, and the Midlothian field, in Scotland, accounted for 1000 barrels.

A total of 229 oil wells were in production at the close of the year—227 at Nottinghamshire and one each at Lancashire and Midlothian. Only two wells were completed during 1952, one each at Lancashire and Nottinghamshire. Both were dry holes.

Three wells were drilling as the year ended at Nottinghamshire, Isle of Wight and at Yorkshire. Total footage drilled during the year amounted to 12,909.

Refinery Expansion. The most important development in the oil industry in Great Britain during 1952 undoubtedly lay in the great progress made in the extensive refinery expansion program. Compared with a throughput capacity of only about 18 million barrels a year in 1947, the crude throughput capacity of British refineries increased to almost 200 million barrels per year at the close of 1952. It is expected that the eventual possible capacity will reach approximately 205 million barrels a year by the end of 1954.

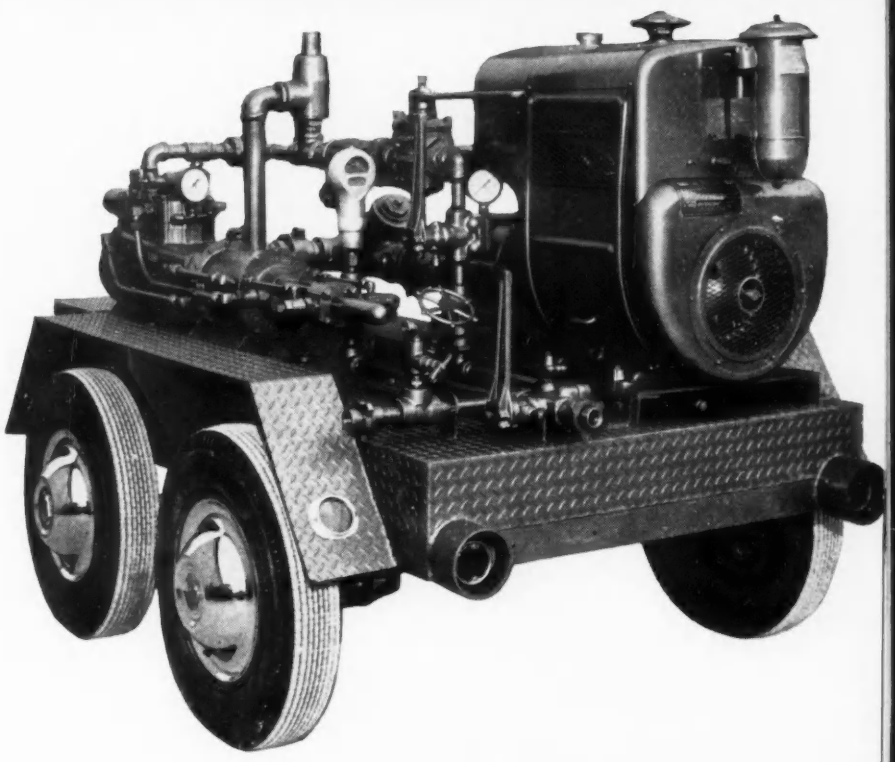
Notable progress was made during the year in several of the new refining plants under construction. At Coryton, Essex, some of the units of the new Vacuum Oil Company refinery were put into operation and the catalytic cracking unit reached an advanced stage of construction.

Anglo-Iranian Oil Company refineries accounted for considerably increased throughputs in 1952. Llandarcy refined 32,543,100 barrels as compared to 28,083,150 barrels during the previous year. Grangemouth refinery, also an AIOC installation, handled an increased throughput from 11,566,800 barrels in 1951 to 18,168,750 barrels last year. At the close of the year, work was completed on the new catalytic cracking units at both Llandarcy and Grangemouth, and these plants were commissioned in January, 1953. Good progress was made on the new lubricating oil plant at Llandarcy, which was expected to be in service in 1953.

At the AIOC Pumpherston refinery, which operates on Scottish shale oil and crude produced in the United Kingdom, throughput was 1,216,350 barrels.

The new Kent refinery began operations early in 1953, and by March a crude throughput corresponding to an annual rate of 22,950,000 barrels was being processed.

SAVE
on your
PULLING JOBS



PUMP CHARGE
$150.00
FIRST 24 HOURS
$25.00
EACH ADDITIONAL 24 HOURS

THE

WILSON HYDRAULIC PULLING TOOL

PLUS THE

WILSON HIGH PRESSURE SERVICE PUMP

Here is a service combination that can't be beat —a Hydraulic Pulling Tool you can't stick in the hole and a high pressure Pump at a reasonable charge.

The Wilson Hydraulic Pulling Tool is the "safest" tool you can run. There are no "J" slots; it is not necessary to rotate and no matter how hard the Pull on the "fish" no additional thrust is applied against the casing with the Anchor slips.

The small, powerful pump (pictured above) is trailer mounted and rented at a fraction of the fee generally charged for pumping service.

On your next Pulling Job—contact the nearest Wilson Supply Store—or phone the "Fishing Tool Division," Wilson Supply Company, 1301 Conti Street, Houston, Texas. BL-0471 — CA-6329.

Service Also Available Thru:

D & W TOOL CO.
Corpus Christi, Tex.

BOWEN FISHING TOOL CO.
Santa Fe Springs, Calif.

J & K TOOL CO.
Odessa, Tex.

WILSON SUPPLY COMPANY

BRANCH STORES
TEXAS—Alice, Corpus Christi, Victoria, Bay City, Columbus, Barbers Hill, Liberty, Beaumont, Kilgore, Monahans. LOUISIANA—Lake Charles, New Iberia, Houma, Harvey, Shreveport.

1301 Conti St. (Cor. of Walnut)
HOUSTON, TEXAS

SALES OFFICES
Tulsa
Dallas
Shreveport
New Orleans

Italy . . . 71 wells completed in '52 for a total footage of 249,915. Crude production hits 75,300 barrels. Parliament approves state monopoly.

CRUDE PRODUCTION in Italy during 1952 totaled 75,300 barrels, an increase of 3300 barrels from 1951. Seventy-one wells were completed in the year with a total footage of 249,915, as compared with twenty-nine wells and a footage of 109,163 completed in the Po Valley during 1951.

Three wells found oil in the Correggio district, and one in the Imola district. Fifty-two were gas wells and twelve were dry holes. Twelve of the gassers were credited to Bordolano.

The Italian Parliament approved a law creating the Ente Nazionale Idrocarburi, a state monopoly for oil and gas research and exploitation. The new organization not only has a monopoly on activities in the Po Valley but has also extended its research in Sicily and in Central and Southern Italy. The Italian Minister for Industry and Commerce stated that the extension of the monopoly throughout Italy is possible if private initiative proves insufficient in certain areas.

Privates Stymied. Many private capital companies were in a state of inactivity due to the stoppage of research and exploitation permits to private concerns while the state-owned oil and gas enterprise was left free to act at any time.

During 1952 important discoveries of gas wells were reported from the province of Macerata in Central Italy where research work was carried out by the Montecatini Company and the Ente Nazionale Metano in behalf of the Chamber of Commerce and Industry of Macerata. The wells in this district yielded from 1,886,940 to 2,515,920 cubic feet of gas a day. There was also progress in research work carried out in Sicily where two wells were drilled by the D'Arcy Exploration Company in the zone of Ragusa and where important gas structures were discovered in the province of Catania. A state of uncertainty due to the fact that the Parliament has failed to act on a new mining bill has held back exploitation of these resources on an industrial basis.

Refinery Expansion. Several projects for the enlargement of the Italian refining industry were initiated during 1952. A reforming plant was put into operation at the IROM refinery at Porto Marghera, Venice, where both catalytic cracking and lube units are under construction. The Trecate-Vado Ligure pipe line was connected with SARPOM's San Martino di Trecate refinery which was completed during the year.

The Italian Ministry for Industry and Commerce refused permits for new refineries in Genoa, San Giorgio di Nogaro, Cagliari and Palermo.

Yugoslavia . . . Tito continues drive toward self-sufficient petroleum economy. Crude production up, natural gas output spurts, pipe lines planned.

YUGOSLAVIA'S CRUDE production climbed to 1,731,793 barrels during 1952, a year of active expansion and high promise for all segments of the nation's oil industry.

Natural gas output took its biggest spurt, new pipe line systems were planned, and new refining units went on stream or into construction as Marshal Tito's regime continued its efforts toward a self-sufficient petroleum economy.

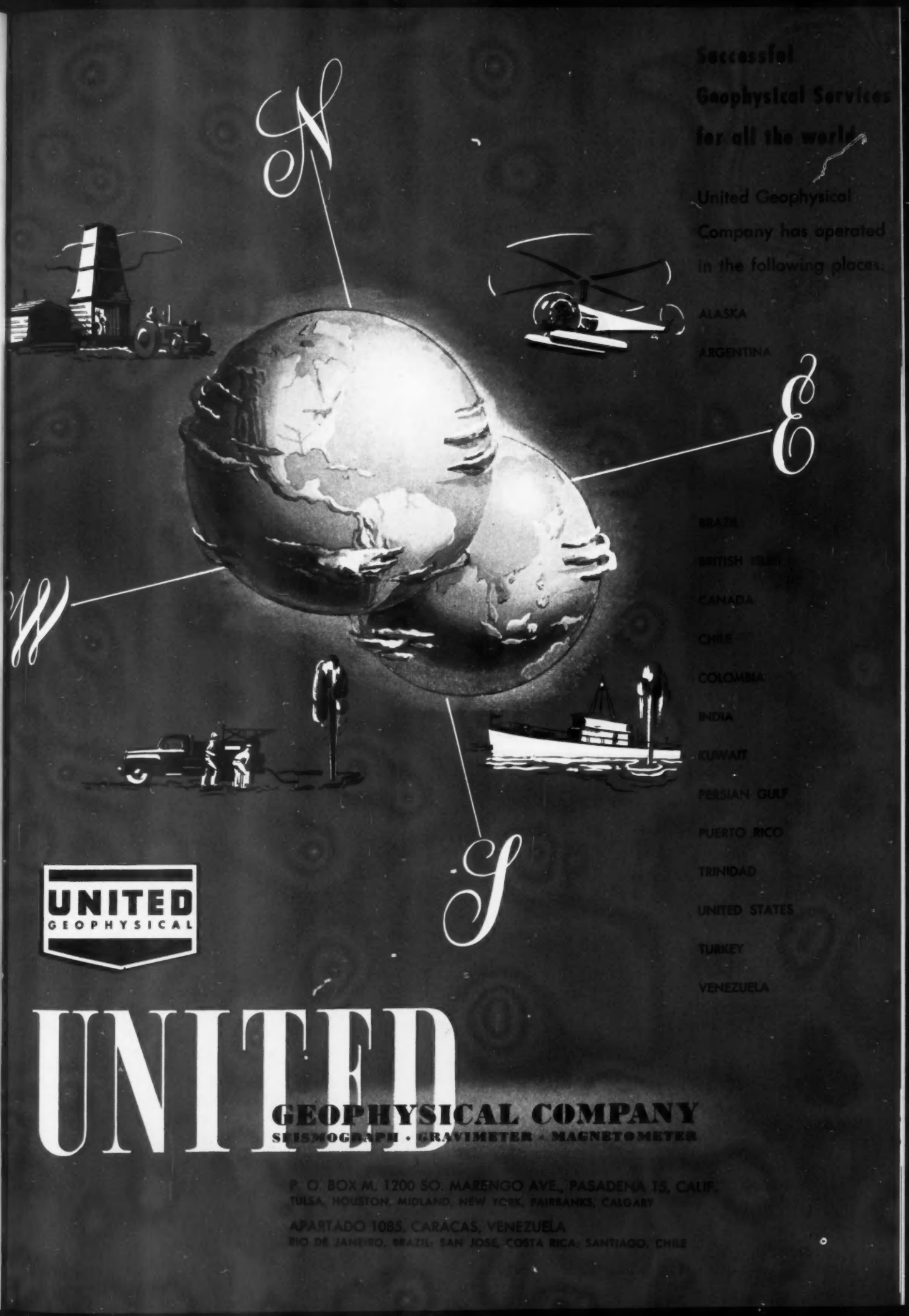
Exploration also was stimulated to realize Tito's announced objective of 3,037,050 barrels for 1954. Chances of achieving this output, which would almost triple 1951's yield of 1,155,215 barrels, will rest primarily on the continued development of the Croatian fields, particularly around Klostar, and on the success of brisk geophysical activity, both accomplished and planned. Last year's exploratory work was focused on Southwestern Yugoslavia, between Sarajevo and Moster, and the whole territory between Sisak and Banjaluka. Additional work was carried out in Central Serbia between Cacak and Krusevac, and in Southern Serbia between Skoplje and Tetovo and between Stip and Strumica.

That gas production increased to 229 Mmcf, compared with the previous year's 39 Mmcf, was largely due to three areas—Northern Serbia, Northern Croatia and Northern Slavonia. Most prolific of the three was Northern Croatia, in the Gojile-Janja-Lipa area. Production opened there in the summer of 1952 was dammed up by the lack of pipe line outlets, but this situation will be eased by a government directive for three systems:

- From Northern Croatia, a 60-mile line to Zagreb.
- From Zrenjanin and Vojvodina in Northern Serbia to nearby industrial centers.
- From the North Slavonian fields of Doljina-Lendava to the city of Maribor.

The three projects are to be completed by the end of 1953 at an initial estimated cost of $1,200,000. Likewise projected this year is storage in the Adriatic province of Dalmatia.

Units were placed in operation at the Rjeka, Brod and Maribor refineries during 1952, with additional construction promised for this year, including completion of the Dubrovnik and Smederevo refineries.


Successful
Geophysical Services
for all the world
United Geophysical
Company has operated
in the following places:
ALASKA
ARGENTINA
BRAZIL
BRITISH COLUMBIA
CANADA
CHILE
COLOMBIA
INDIA
KUWAIT
PERSIAN GULF
PUERTO RICO
TRINIDAD
UNITED STATES
TURKEY
VENEZUELA
N
E
W
S
UNITED
GEOPHYSICAL
UNITED
GEOPHYSICAL COMPANY
SEISMOGRAPH · GRAVIMETER · MAGNETOMETER
P. O. BOX M, 1200 SO. MARENGO AVE., PASADENA 15, CALIF.
TULSA, HOUSTON, MIDLAND, NEW YORK, FAIRBANKS, CALGARY
APARTADO 1085, CARACAS, VENEZUELA
RIO DE JANEIRO, BRAZIL; SAN JOSE, COSTA RICA; SANTIAGO, CHILE

Denmark . . . Indications of oil fail to pay off. Tönder 1 shows promise in exploratory campaign that was started back in 1938.

THE PRESENCE of oil in Denmark was indicated in early 1952. But a year and a half later discovery of commercial production had not been made. This was, however, the first encouraging result of an exploratory campaign begun in 1938 by Danish American Prospecting Company (Gulf Oil Corporation) which has been active for about ten years excluding the interruption during World War II.

Indications of oil came as the result of core samples taken from a wildcat well, Tönder 1, near the town of Tönder in southern Jutland, close to the German border. The well was drilled to a total depth of 10,248 feet. Reports at the time indicated a possible commercial discovery had been made, but in mid-1952 the well was temporarily abandoned. A second deep test in the immediate area was spudded in and was drilling near 11,000 feet in mid-1953.

Previously, DAPCO had completed and abandoned as dry two other deep tests. The first of these was in southern Jutland, near Jylland, which was completed in 1947. The second was near Aarchus in central Jutland and was completed in 1951. In addition, two semi-deep tests were drilled in 1950 in northern Jutland without traces of oil. During 1952 seismic work was continued and four stratigraphic tests were drilled.

DAPCO has had an exclusive concession in Denmark since 1938. The agreement was redrawn in 1950 for a 50-year term covering 17,000 square miles and adjacent water areas in Jutland. Under the terms of the revised agreement the Danish government has a 5 percent interest in the company.

Russia and Satellites . . . 1952 production estimated at 342,776,490 barrels. Activity in new and offshore areas credited by top executive.

RUSSIA'S PETROLEUM industry fulfilled its production goal of 341,831,000 barrels in 1952, with a surplus production of 954,490 barrels, according to statements by Russian officials. This would put Russia's crude production for the year at 342,776,490 barrels.

A top Russian oil executive said that the increase in production was due mainly to activities in new areas and in offshore areas. The East zone produced 50 percent of the total Soviet crude oil and 40 percent of this volume came from the "Second Baku" area. This area produced 138,187,000 barrels, while Emba, Pechora, Sakhalin and Central Asia yielded 32,728,500 barrels.

Offshore fields produced 15 percent of the entire Soviet volume of crude oil. Most of this production stemmed from the Caspian Sea, where production went up 30.5 percent compared with the previous year.

Several important new fields came into full swing during 1952. The Oktaberskij field, located along the railroad from Ufa to Kuibitshev had a production of 13,091,400 barrels from 420 wells. Increased drilling in the Kokland area raised production to a level with the Oktaberskij field, an increase of 15 percent over 1950 production. In the Kuibitshev area the Soviets started production of oil slate. This is scheduled to be used as a basis for the manufacture of petrochemical products.

One of the biggest projects within the Soviet oil industry was the enlargement of the pipe line system. A total of 15 percent of the entire Russian oil production, or 51,274,650 barrels was transported in pipe lines during 1952.

Russia's known deposits of oil have experienced a steep increase. The 1938 estimate was 9,454,900,000 barrels as compared with the 1952 figure of 32,728,500,000 barrels. This increase is mainly due to several large deposits found in the East and Central Asian regions.

Albania

ALBANIA'S 1952 CRUDE production of 2,800,578 barrels was approximately 400,000 barrels more than was produced in 1951. The Devoli and Berat fields were developed during 1952 with the assistance of the Russian Oil Mission. The Russian Mission also financed the construction of the Valona refinery which has a capacity of 2 million barrels a year. The refinery, with skimming, cracking and lube units, will be placed into operation during 1953. Pipe lines were constructed from the Devoli and Berat oil fields to both the Valona and Cerszic refineries.

The Albanian government carried out exploratory drilling in the Kruja district in Central Albania, along the Vojussa River and in the Argirocastro district near the Greek-Albanian frontier.

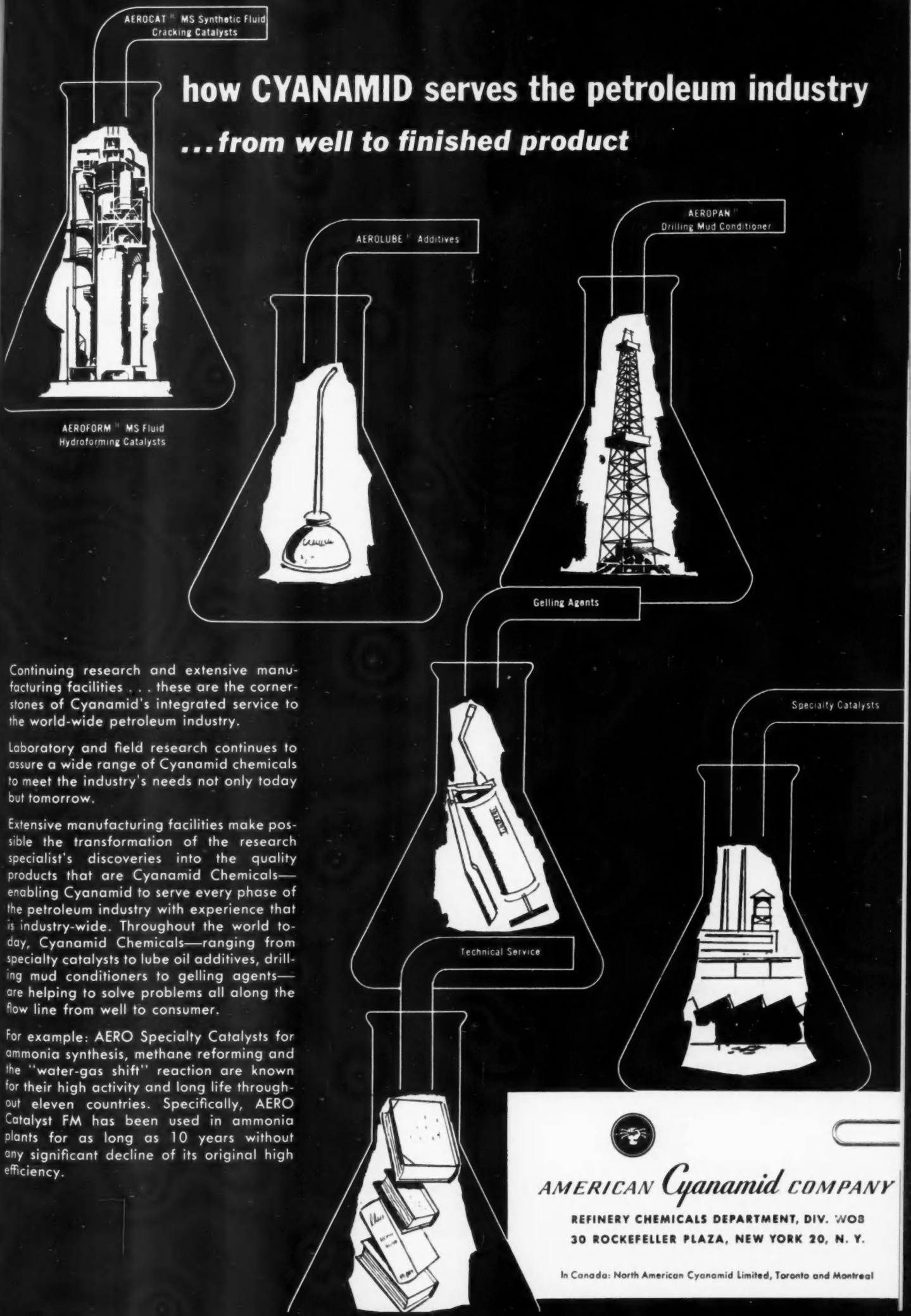
The mass of Albanian oil is either handed over to Soviet armed forces stationed in Albania, or is sold, by provisions of a trade agreement, to Bulgaria and Poland. However, import of lubricating oil is necessary, due to the absence of a lube refining department in the Cerzic refinery which is still under construction. During 1952, only the cracking unit was producing in this refinery. The planned date of completion is Dec. 31, 1955, the last day of the current Five Year Plan.

Czechoslovakia

CZECHOSLOVAKIA PRODUCED 590,000 barrels of crude during 1952, an in-

how CYANAMID serves the petroleum industry

...from well to finished product



Continuing research and extensive manufacturing facilities . . . these are the cornerstones of Cyanamid's integrated service to the world-wide petroleum industry.

Laboratory and field research continues to assure a wide range of Cyanamid chemicals to meet the industry's needs not only today but tomorrow.

Extensive manufacturing facilities make possible the transformation of the research specialist's discoveries into the quality products that are Cyanamid Chemicals—enabling Cyanamid to serve every phase of the petroleum industry with experience that is industry-wide. Throughout the world today, Cyanamid Chemicals—ranging from specialty catalysts to lube oil additives, drilling mud conditioners to gelling agents—are helping to solve problems all along the flow line from well to consumer.

For example: AERO Specialty Catalysts for ammonia synthesis, methane reforming and the "water-gas shift" reaction are known for their high activity and long life throughout eleven countries. Specifically, AERO Catalyst FM has been used in ammonia plants for as long as 10 years without any significant decline of its original high efficiency.

AMERICAN *Cyanamid* COMPANY

REFINERY CHEMICALS DEPARTMENT, DIV. WO8
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

In Canada: North American Cyanamid Limited, Toronto and Montreal

crease of 240,000 barrels over the 1951 production. This increase was due largely to the completion of three wells at Pardubice where an important oil structure was discovered. During the year 5 million barrels of crude were imported from Novorossisk and Batum through the Danube and 3,500,000 barrels were imported from Roumania.

Several projects for the enlargement of Czechoslovakian oil refining were begun during 1952. The annual capacity of the Bratislava refinery will be enlarged to 6 million barrels with the addition of a cracking unit, and other refineries are planned for Prague, Pardubice and Kosice. Equipment for the refineries will be obtained from Eastern Germany.

The greater part of Czechoslovakian oil requirements for the year were imported from Roumania and Albania. Major volumes also came from the Soviet-operated East Austrian oil fields. In a trade agreement signed during 1952, Czechoslovakia agreed to buy 4,069,200 barrels of Roumanian oil during 1953 and 1954.

East Germany . . .

EASTERN GERMANY produced 2456 barrels of crude oil during 1952. This volume was obtained from the only producing field, Fallstein. The two Fallstein wells, in operation since 1930, were able to produce this amount after extensive reshaping conducted during 1952. Crude oil from the Fallstein wells is processed at the German state-owned-and-operated refinery near Luetzkendorf.

The main source of the East German oil is the processing industry located in Middle Germany, around Halle, Merseburg and Leuna. The synthetic plants are split into two groups: One, and the larger, is the Soviet-owned-and-operated group of processing plants, at Leuna, Zeitz and Schwarzheide. The second group is made up of German state-owned-and-operated plants in Luetzkendorf and Boehlen. All five enterprises turned out 8,771,250 barrels of synthetically derived oil products during 1952. This production is to be boosted to almost 14,034,000 in 1955, the last year of the current Five Year Plan.

Hungary . . .

HUNGARIAN CRUDE OUTPUT rose to 5 million barrels in 1952 due to the increased output of the Balaton Lake zone. Fifteen new wells were completed in this zone with a total depth of 153,234 feet and a daily average output of 2300 barrels.

A significant factor in Hungary's 1952 oil picture was the decreasing production at the Lispet field and the rise of production in the Mezoetur field, which was discovered during the summer of 1951. It is expected that the Mezoetur production will reach—if not exceed—the Lispet output during 1953, to take the lead in Hungarian oil production.

There were several plans for increased activity in the refining industry during the year. The capacity of the Budapest refinery will be increased to 6 million barrels a year during 1953 by the addition of an atmospheric distillation unit. The Petfurdo hydrogenation plant is to be transformed into a refinery with the conversion of the hydrogenation sets into cracking units to which a reforming plant will be added. The capacity of the Almasfuzito (Komarom) refinery will be increased to 3,500,000 barrels a year.

In addition to the local crude output, the Hungarian refineries handled about 2,500,000 barrels of crude oil imported from Batum on behalf of Russian interests, and 2 million barrels imported from Roumania. The rationing of motor fuel has been maintained in Hungary since the Hungarian refineries are compelled to hold about 60 percent of their output at the disposal of the Russian Military Mission in Budapest.

Poland . . .

POLAND'S CRUDE PRODUCTION for 1952 was 1,962,855 barrels, according to Polish officials. This was an increase of 664,530 barrels over the 1951 production of 1,298,325 barrels.

Annual consumption of the unrationed, but tightly controlled and sporadically delivered oil products for private consumers was stated to be 4,444,200 barrels for 1952, 45 percent of which comes from domestic sources. The gap between the 4,444,200 barrels requirement and the 1,962,855 barrels crude production is filled with 1,111,050 barrels of synthetically derived oil products from three Polish synthetic oil plants, located at Blechhammer, Heydebreck and Oswieciem. Crude ranging from 1,333,260 to 1,481,400 barrels was imported from Roumania, Eastern Germany and the Soviet Union.

The government's drilling plan for 1952 was fulfilled by the Krosno Oil Well Group only, with the Sanok, Gorlice and Ustryki Oil Well Groups lagging. The Sanok field appeared to be the farthest behind. Reports described this field as having the machinery and equipment idle 25 percent of the time, due to bad organization and lack of supervision at the working sites.

Roumania . . .

ROUMANIAN CRUDE output for 1952 was 32 million barrels, an increase of 5 million barrels over 1951 production. The increase was largely due to the action of the Roumanian government which, with the Russian government, transferred 50 percent of the workers from the Ploesti fields to the Caucasus fields and also employed Russian immigrants in the oil fields.

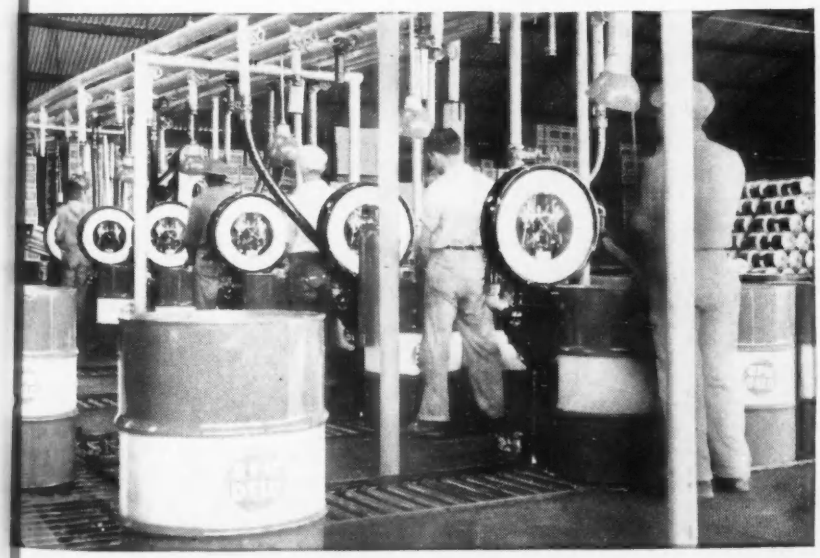
During the year, 20 new wells were drilled at Prahova and 16 wells were drilled in the Darmanesti and the Harja-Pacurita zones. The total depth reached was about 350,000 feet.

The Roumanian government adopted a three-year program for the reorganization of the petroleum refining industry. This program included the reconstruction of the dismantled Ploesti refinery which has a capacity of 8 million barrels yearly and includes a cracking unit, two distillation sets and a lube plant. The Costanza refining plant will be enlarged to a capacity of 6 million barrels a year with the addition of a distillation unit and a reforming unit. Five new refineries will be built along the Roumanian coast near the Danube. Upon completion of this program, the Roumanian oil refining industry will include 75 petroleum refining plants with a yearly crude oil processing capacity of 32 million barrels.

A pipe line connecting the Ploesti oil fields with Turnu Severin and Odessa was completed during the year and construction was begun on a pipe line connecting the Campina oil fields with Ollenita on the Danube.

centers for bulk liquids

at 5 GENERAL AMERICAN Tank Storage Terminals



Modern bulk liquid tank storage terminals with guaranteed privacy. Storage facilities, pipelines and closely guarded manifolds (designed to protect against contamination) are *yours to use.* At Carteret and Goodhope terminals your bulk liquids can be blended to specification, canned, drummed or barrelled for distribution.

All this without investing or risking your capital!

Open new markets—serve your present markets more efficiently—with these 5 General American Tank Storage Terminals.

And . . . General American Tank Storage Terminal warehouse receipts represent the highest form of collateral. For financing, storage or distribution suggestions, contact your nearest General American representative.

TANK STORAGE TERMINALS GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TANK STORAGE TERMINALS

A Division of General American Transportation Corporation

135 SOUTH LASALLE STREET • CHICAGO 90, ILLINOIS

Terminals: Chicago, Ill. • Carteret, N. J. • Goodhope, La. • Houston and Corpus Christi, Texas

Shell Oil Company Photo

SIX SEA LINES leading out to sea from Iraq Petroleum Company's terminal at Banias. A 30-inch pipe line running 556 miles from Kirkuk in Iraq to Banias on Syria's Mediterranean seaboard was completed in April, 1952.

Iraq . . . New pipe lines enable nation to increase production to 384,326-barrel daily average.

IRAQ, THE SECOND oldest oil-producing nation in the Middle East, has long been limited to only a fraction of its potential production due to the lack of adequate pipe line outlets. The nation hit its stride last year with the completion in April of a new 30 and 32-inch line to the Mediterranean and a 12-inch line to the Persian Gulf.

The impact on the nation's crude oil output was immediate. Production last year mounted rapidly and for the full year averaged 384,326 barrels daily, compared with 177,929 barrels a day in 1951. The rate in the first four months of this year moved up to an average of 548,740 barrels a day.

The impact, too, has been noticed in a rise of exploratory drilling and the extensions, termed "major," to the Zubair field in southern Iraq, made during 1952. This activity give some support to the beliefs of many geologists that the eventually proved crude oil reserves in Iraq may be substantially greater than present qualified estimates. The tempo of wildcatting has been stepped up in 1953 with seven rigs running on tests in the early part of the year.

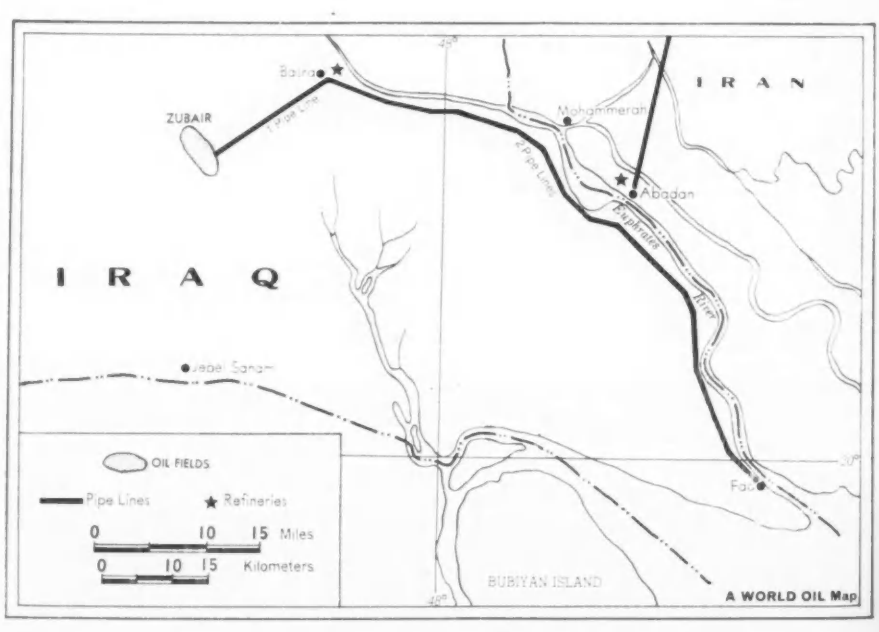
The impact on Iraq has been great. The increased flow under the terms of the revised concession agreement made in 1951 gives the Iraqi Government half the profits from Iraq Petroleum Company, Ltd. The nation's share for the 12 months ending March 31 amounted to $95.2 million.

Under terms of this agreement, Iraq's revenues will continue to rise in 1954 and 1955 under minimum annual production requirements IPC must meet. Should Khaniqin Oil Company discover oil in exportable quantities in its present drilling program in northeastern Iraq, the government will also receive a 50 percent share of the profits of this operation.

Except for one small skimming plant scheduled to be abandoned, the government owns all the nation's refineries and buys its crude for a token price to meet domestic requirements. A further stipulation in the 1951 agreement with IPC provides that if in the future royalties are increased in nearby Middle East nations, Iraq reserves the right to request similar increases.

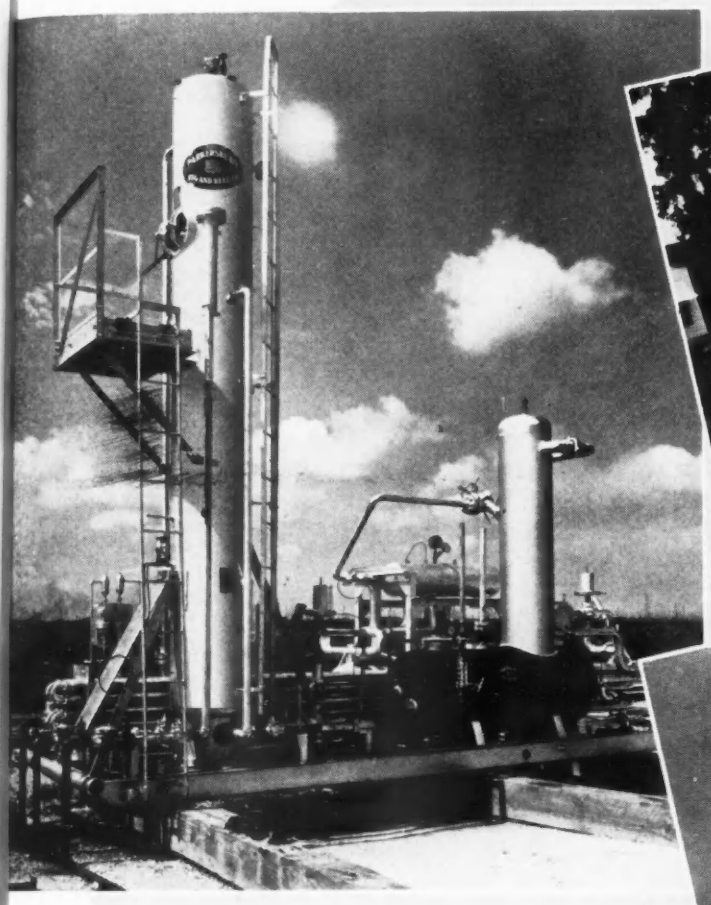
Such a favorable concession contract for the government would seemingly indicate trouble-free smooth sailing for the operating companies as long as all obligations were fulfilled. This hasn't been the case, however, with the cry of "nationalization" on the lips of some of the extremists in Iraqi politics. It's a weak cry at the moment, but it could gain strength.

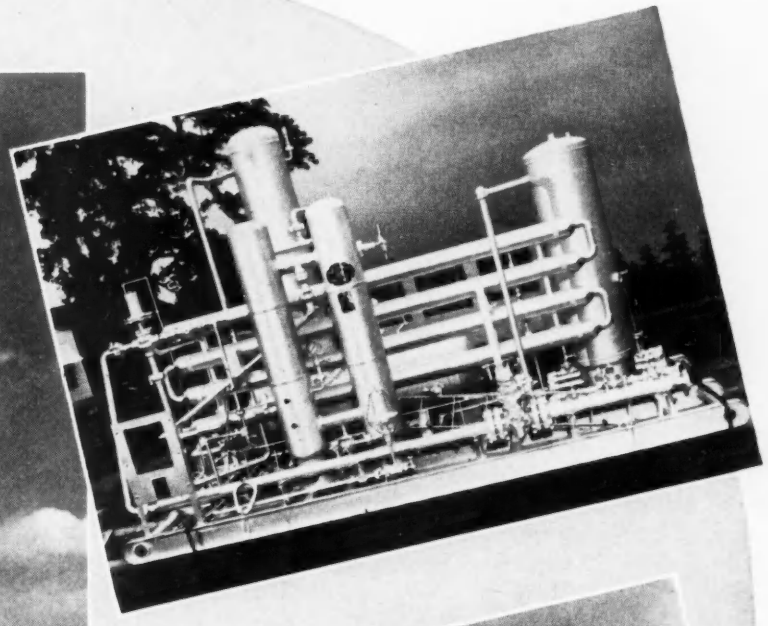
Iraq is a constitutional monarchy which this past May crowned young Feisal II king. Earlier this year, Iraq held its first direct election in the nation's history and the supporters of strongly pro-Western General Nuri es-Said and independents friendly to him won a smashing victory. The victory definately assured there would be no nationalization of oil during the tenure of office of the present govern-

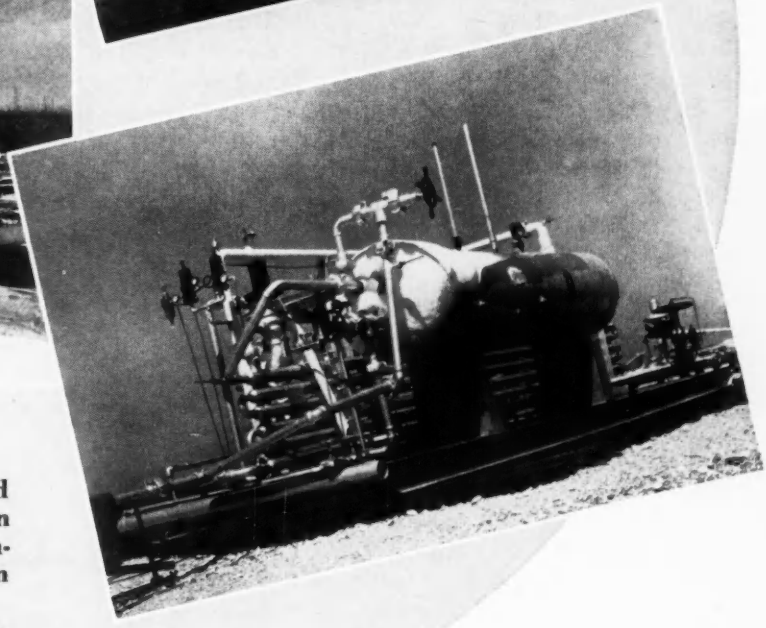


PARKERSBURG HYRECOS..

...are designed to fit *YOUR* wells, not just *ANY* well!







For maximum profits and the most efficient and trouble-free operation, you need a cold separation unit that is built to deliver outstanding performance on YOUR well . . . not just a "good" job on almost ANY well.

This is exactly what Parkersburg Hyrecos are designed to do. Each one is a combination of basic elements assembled to fit ONE SPECIFIC APPLICATION.

Parkersburg, inventor and pioneer of cold separation, has proved by years of experience and trial that no one combination can possibly fit all applications . . . a "universal" cold separation unit is as impossible as a universal hat.

Ask your Parkersburg Representative for complete data on the correct Hyreco installation for your cold separation problem.

PARKERSBURG
Pioneer and Leader in
COLD SEPARATION

PESA
DISTRIBUTED EQUIPMENT SUPPLIERS ASSOCIATION
PARTNERS IN PETROLEUM PROGRESS

No. 5312

PARKERSBURG
PRESSURE EQUIPMENT

HORIZONTAL AND VERTICAL SEPARATORS • HYRECO • HYDRACEPTER • SCRUBBERS • TREATERS • HEATERS

Manufactured in Houston, Texas

ment, but the nature of the elections has caused some discontent.

The elections came while martial law was enforced after political parties had been dissolved and practically all party newspapers suppressed. Opponents of Nuri es-Said charged the elections were undemocratic and should the various socialist and extremist groups form a coalition to try for a political comeback the opposition to the government could be strong.

Iraq has experienced a wave of demands for reforms since the outbreak of riots in Baghdad last November. The rioters demanded nationalization of Iraq's oil as the answer to their dissatisfaction with internal conditions. Nuri es-Said previously was premier when the existing 1951 oil agreement was signed and he has a record of urging legislation to improve the mass of the more than three million people. Still, however, there is a wide gap between the top and bottom of the social structure.

Success of the government in holding power will be measured in the accomplishments of Iraq's Board of Economic Development. This was established by the previous Nuri es-Said administration to invest the oil royalties to bring both long-term and immediate benefits to Iraq. Its work in flood control, education, roads and medical programs may reap early gains, though the benefits from its planned irrigation projects over the sparsely-populated vast alluvial plains will take longer to materialize.

Continuation of oil operations by private capital in Iraq, however, may well rest with the success or failure of the present government. The most important company in the country is Iraq Petroleum Company, Ltd. Ownership of the company is held 23.75 percent each by Anglo-Iranian Oil Company, Ltd., Compagnie Francaise des Petroles, New East Development Company—Socony-Vacuum Oil Company, Inc., and Standard Oil Company (N. J.)—and The Royal Dutch-Shell Group. The remaining 5 percent interest is owned by an individual, C. S. Gulbenkian.

IPC's concession is in northeastern Iraq, bordering both Turkey and Iran in the provinces of Baghdad and Mosul. This includes the large Kirkuk field. Mosul Petroleum Company, Ltd., an IPC subsidiary, has the concession to the area west of the Tigris River and north of 33° latitude. The area includes the Ain Zalah field and four non-producing fields. Basrah Petroleum Company, Ltd., another IPC subsidiary, has all of the rest of Iraq under concession, except for a small area in eastern Iraq on the Iranian border. The concession here is held by Khaniqin Oil Company, an Anglo-Iranian subsidiary.

Drilling and Production. With the completion of an additional 30 and 32-inch pipe line from Kirkuk to the Mediterranean in the spring of last year and a full year's operation of the pipe line from the Zubair field to the Persian Gulf, Iraq's crude production in 1952 was more than double (116.5 percent) the 1951 volume. Production in the early part of 1953 has been about 40 percent higher than the 1952 average, or 548,740 barrels daily for the first four months of the year. This compares with 384,326 barrels per day for all of 1952.

Production in 1952 totaled 140,663,400 barrels compared with a 1951 volume of 64,975,800 barrels. Almost all of the increase in 1952 was made by Iraq Petroleum Company and its subsidiary companies—with the group's total volume from three fields amounting to 136,924,200 barrels. This compared with the company's total output of 61,654,600 barrels in 1951. The remaining production in Iraq, all of which was consumed domestically, was 3,739,200 barrels from the Naft Khaneh field. Production in 1951 from this field was 3,321,200 barrels.

Kirkuk, Iraq's largest field which extends some 60 miles in length and up to six miles in width, last year accounted for 118,045,100 barrels of total production, which was nearly double the field's 1951 output of 60,701,400 barrels. The field, a 1927 discovery and the first big field in Iraq, is estimated to have a potential maximum efficient production from existing wells of at least 500,000 barrels per day. Daily average from Kirkuk in 1952 was 322,627 barrels and the current output is 449,000 barrels daily.

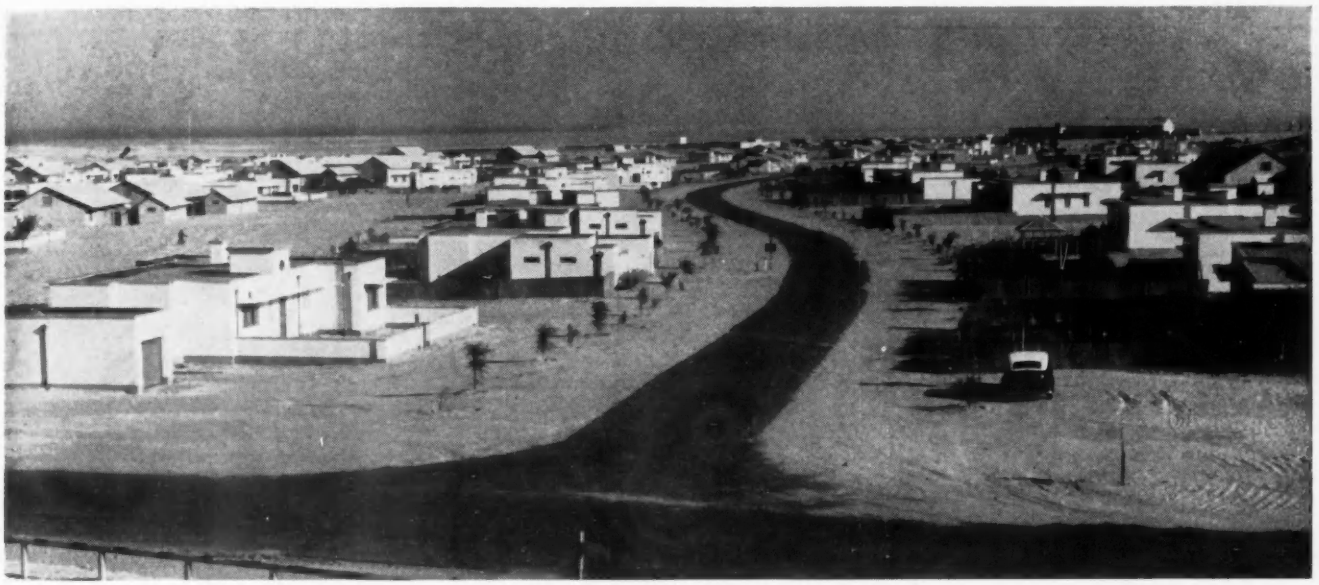
Pipe line outlets from Kirkuk and from Mosul Petroleum's Ain Zalah field in north Iraq to the two Mediterranean terminals at Tripoli, Lebanon, and Banias, Syria, limit production of these two fields to about 475,000 barrels daily. Current production from Mosul Petroleum's Ain Zalah field in northern Iraq accounts for about 28,000 barrels daily of this total.

Kirkuk at the end of 1952 had 31 wells on production though there are more producible wells in the field. One well was completed in 1952 and this year four rigs have been running, three on exploration and one on development wells. The exploratory drilling under way is to test a possible pay zone below the present producing horizon of the field and to test other possible structures in the region. Production from the field is from a limestone on a closed anticline the top of which is found at a depth of 950 feet and the bottom is at 3200 feet. Average thickness of the pay is 800 feet.

Ain Zalah, a 1940 discovery, was not placed on commercial production until September, 1952, with the completion of a pipe line connecting the field to the main Kirkuk-Mediterranean lines of IPC. Production in the four months this line operated last year amounted to 1,970,000 barrels. The 1951 revised concession agreement with the Iraqi government requires that by 1954 a minimum of 458,000 barrels daily production be maintained from Kirkuk and Ain Zalah. Present production from Ain Zalah is at pipe line capacity and the total from the two fields already is in excess of the 1954 required minimum.

Operations at Ain Zalah were halted in 1941 and were resumed in 1946. Since that time, 13 wells have been completed, 12 into the upper pay at 5500 feet and one into the lower pay at about 9000 feet. Nine of these are producers. One well was completed in 1952 and one rig has been on an exploratory structure in the area in 1953.

Eleven of the 13 wells completed in Iraq in 1952 were drilled by Basrah Petroleum in the Zubair field in southern Iraq. With the pay zone a sandstone at 11,000 feet, Zubair is the deepest producer in the Middle East. Production from the field started in December, 1951, with the completion of a pipe line outlet to the Persian Gulf and in that year total 913,204 barrels. Operation of the line in all of 1952 brought production to 16,202,400 barrels and, with the completion of a new 24-inch line in October, will add about 100,000 barrels daily to the present 60,000 barrels per day.



STAFF HOMES of the Kuwait Oil Company at Ahmadi. *The Kuwait Oil Co., Ltd., Photo*

Kuwait . . . nears billionth barrel of oil. Burgan field top producer for world . . . from less than 6 million in '46 to 273.4 million barrels in '52.

SOMETIME THIS fall the billionth barrel of oil produced from the tiny sheikdom of Kuwait will be gauged. This figure will have been reached in just a little more than seven years since commercial production started from the giant Burgan field. This field produced more oil than any in the world last year. Its output has increased from less than six million barrels in 1946 to 273.4 million barrels in 1952.

Though Kuwait's production was showing substantial gains annually prior to 1951, it was the nationalization of the Iranian properties of Anglo-Iranian Oil Company, Ltd., that created a place in world markets for the mounting production from the 6000-square mile sheikdom at the head of the Persian Gulf. Needing oil to fill the gap caused by the Iranian expropriation, Kuwait Oil Company, Ltd.—jointly-owned by Gulf Kuwait Company (Gulf Oil Corporation) and D'Arcy Kuwait Company (Anglo-Iranian)—stepped up the flow from the Burgan field by 63 percent in 1951 and made another 33 percent boost last year.

Anglo-Iranian's one-half share of present Kuwait production amounts to about 60 percent of the company's peak production in Iran before nationalization and is the chief source of crude supply to the company.

World Markets. While the rate of growth of production in the immediate future may be slowed somewhat by the more modest annual expansion in world demand, Kuwait—a sterling producer selling primarily to sterling markets—is in a position to capture its share of increased consumption. A settlement of the Iranian oil issue which would return this production to western world markets could, of course, lower Kuwait's production sights just the same as it would for other Middle East producers.

Meanwhile, a limiting factor to Kuwait's production may be the lack of a pipe line outlet to the Mediterranean. With an outlet only to the Persian Gulf, Kuwait's oil by round trip tanker voyage through the Suez Canal is 7200 miles farther from the European markets than is the production from Saudi Arabia and Iraq accessible by pipe line terminals in Lebanon and Syria. The tanker connection between Kuwait's oil production and its chief outlets in Europe at present depends upon the continued tanker flow through Suez—a pawn in the dispute betwen Egypt and Great Britain.

Kuwait oil also finds other markets outside the sterling area. Imports of crude oil into the U. S. last year from Kuwait amounted to 26,444,000 barbels (72,250 barrels daily), just under 10 percent of total production in the sheikdom and about 5 million barrels higher than shipments to the U. S. in 1951. Imports of Kuwaiti crude into the U. S. in the first quarter of 1953 increased to an average of 99,000 barrels daily, more than double the volume in the first quarter of 1952. Based on estimates furnished the Texas Railroad Commission by several U. S. companies importing Kuwait crude, a higher flow to the U. S. is scheduled for the second and third quarters of this year.

To compensate for the lack of pipe line facilities to the Mediterranean and to keep tanker turn arounds as fast as possible, Kuwait Oil has constructed the world's largest tanker loading pier, a 4000-foot "T" out into the Persian Gulf. This pier can berth eight tankers and can load the vessels at a rate of nearly 800,000 barrels per day. Additional volume can be pumped to tankers through submarine lines buoyed nearby.

Kuwait's crude oil production in the early part of 1953 was setting new

The Kuwait Oil Co., Ltd., Photo

NEW STATE SCHOOL at Schuwaikh. Royalties accruing to the state from petroleum production is bringing many advances to the people of this Middle East kingdom of Kuwait.

peaks which in April amounted to an average of 858,200 barrels daily. The increase, coupled with some cutbacks from peak 1952 production in Saudi Arabia, places Kuwait close to Saudi Arabia as the largest producer in the Middle East. The higher rate of flow from Kuwait this year has been an offsetting influence on the reduction in royalties payable to the sheik of Kuwait on his 50 percent interest in the profits of the company resulting from the lower price posting.

Production Last Year. Total production in 1952 amounted to 273,438,766 barrels, for a daily average rate of 747,100 barrels. This compared with an average of 561,400 barrels a day in 1951. Cumulative production by the end of 1952 totaled 762,698,000 barrels, nearly all of which has been produced from the Burgan field. A small quantity of crude was produced last year from the wells at Magwa, which is officially described by the company at present as an extension of the Burgan field. The first well was completed here in early 1952, and is located about eight miles north of Burgan.

KOC during the past two years and so far in 1953 has operated with three rigs in Kuwait, primarily drilling inside development wells at Burgan. Last year 21 field producers were completed bringing the total number of Kuwait producing wells to 140, of which 131 are at Burgan, eight are at Magwa and one new well at Ahmadi Ridge.

The successful strike at Ahmadi Ridge was made late in 1952 in a wildcat well located nine miles northeast of Burgan. Ahmadi Ridge, like Magwa, is officially termed an extension of Burgan. The 21 successful development and two wildcat wells drilled in 1952 compared with 21 field wells drilled in 1951, of which 20 were producers. Kuwait Oil's producing schedule in 1953 called for producing its wells at Burgan, Magwa and Ahmadi Ridge.

The prolific Burgan field, located on a large anticline with petroliferous beds of Middle Cretaceous age underlying, has four producing sand formations, three of which are well defined. Nearly all the wells in the field are dual producers, flowing through casing perforations from the third and fourth sand series. The latter two are the most predominant in thickness and productivity. The minimum depth of the top of the first sand is 3560 feet and the maximum to the bottom of the fourth sand is 4772 feet. Geological and structural data on the completions at Magwa and Ahmadi Ridge are the same as for Burgan field. The thickness of the pay zones found by the wells in these latter areas, however, are not as great as at Burgan. The minimum and maximum to top and bottom of the pay zones indicated by the wells completed so far are 3817-4580 at Magwa and 4545-4765 at Ahmadi Ridge.

Kuwait Pipe Lines. Crude produced in Kuwait goes through a seven-stage separation process in the field and then is piped to the tank farm at Ahmadi, nine miles northeast of Burgan, where the company has storage capacity in excess of 4 million barrels.

The crude oil pipe line system in Kuwait from Burgan and Magwa to Ahmadi and from there to the loading dock at Mena al Ahmadi has capacity of about 1.2 million barrels daily. The pipe line connection from Burgan to Ahmadi consists of one 20-24-inch and two 20-inch lines with combined capacity of 1,050,000 barrels daily. Oil from the Magwa wells flows through a 250,000-barrel daily capacity 16-inch line 10.5 miles in length. The 5.72-mile pipe line network downhill from Ahmadi to the loading dock and 30,000 barrels daily topping plant at Mena al Ahmadi consists of a series of large diameter lines operating under gravity flow.

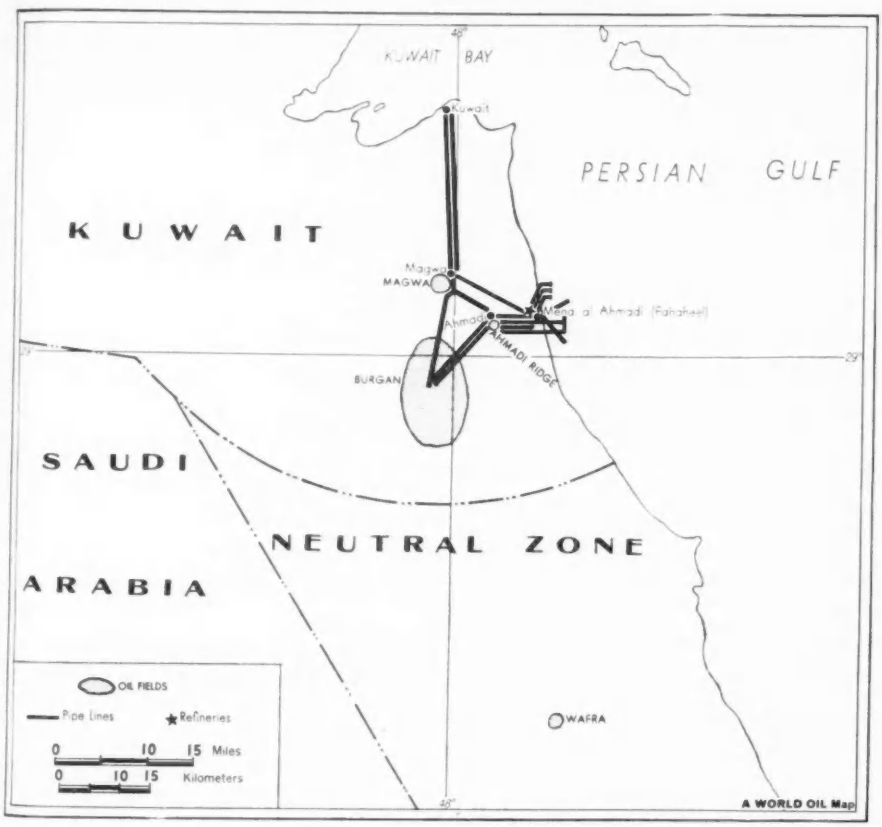
Other pipe lines in Kuwait are a 27-mile 3-4-inch products line from the refinery to Kuwait town, a 10-mile 12-inch gas line from Burgan to Ahmadi and a 10-inch gas line from Ahmadi to Mena al Ahmadi. The sheikdom of Kuwait owns a 30-mile, 8-inch gas line from Burgan to Kuwait town. The mena al Ahmadi refinery is operated to handle local requirements of gasoline, kerosine, diesel fuel and bunkers for tankers.

The 50 percent share of Kuwait Oil profits paid to the ruler of Kuwait in 1952, Sheik Abdullah as Salim as Subah, amounted to $150.2 million which, while making the sheik a wealthy man has also been of substantial benefit to all the people in

this sandy desert slightly smaller than the State of New Jersey. Prior to the discovery and production of oil, the population of nearly 200,000 derived their living from pearling, fishing, shipbuilding and trading.

Water Handicap. Lack of water was and still is a great handicap to the advancement of the nation, and while the same statement has been made in many arid areas from West Texas to the Middle East, the average Kuwaiti would take a fresh water well most any day over a new oil well. Kuwait's water wells produce a brackish liquid which, while suitable for drilling operations, is not potable and cannot be used in the cooling systems of internal combustion engines.

Kuwait Oil Company has operated a 600,000-gallon daily distillation plant at Mena-al-Ahmadi which supplies the needs of the company and approximately 250,000 gallons daily to Kuwait town. The remaining water supply has had to be imported from the Shatt-al-Arab in Iran by dhows.



Neutral Zone . . . Discovery provides another link in chain of proved Mid-East fields.

THE REAL SIGNIFICANCE of the discovery of oil in the Neutral zone between Saudi Arabia and Kuwait early in 1953 is that it provides another important link in the vast chain of proved fields in the Middle East. These fields extend in a northwest-southeast direction from Iraq's Ain Zalah and Kirkuk fields on the north to the east-central Arabian peninsula, a distance of nearly 1000 miles. Running eastward of this line, other fields exist in southern Iraq and Iran for 100 miles.

Of more immediate importance in relation to petroleum deposits, the discovery in the Neutral Zone made by American Independent Oil Company operating on behalf of itself and Pacific Western Oil Corporation gives some indication to a broader expanse of Kuwait's Burgan field, the present southern area of which is only 18 miles north of the Neutral Zone discovery.

Test production from the Aminoil-Pacific Western's wildcat strike, Wafra 4, came from the first Burgan sand reached at a depth of 3470 feet. This is 90 feet shallower than the minimum depth to the top of the first Burgan sand found by most wells in the Burgan field. Prior to completion, Wafra 4 had penetrated more than 150 feet of this sand, giving indication of a thicker and more well defined section of the first sand that has been found in Kuwait.

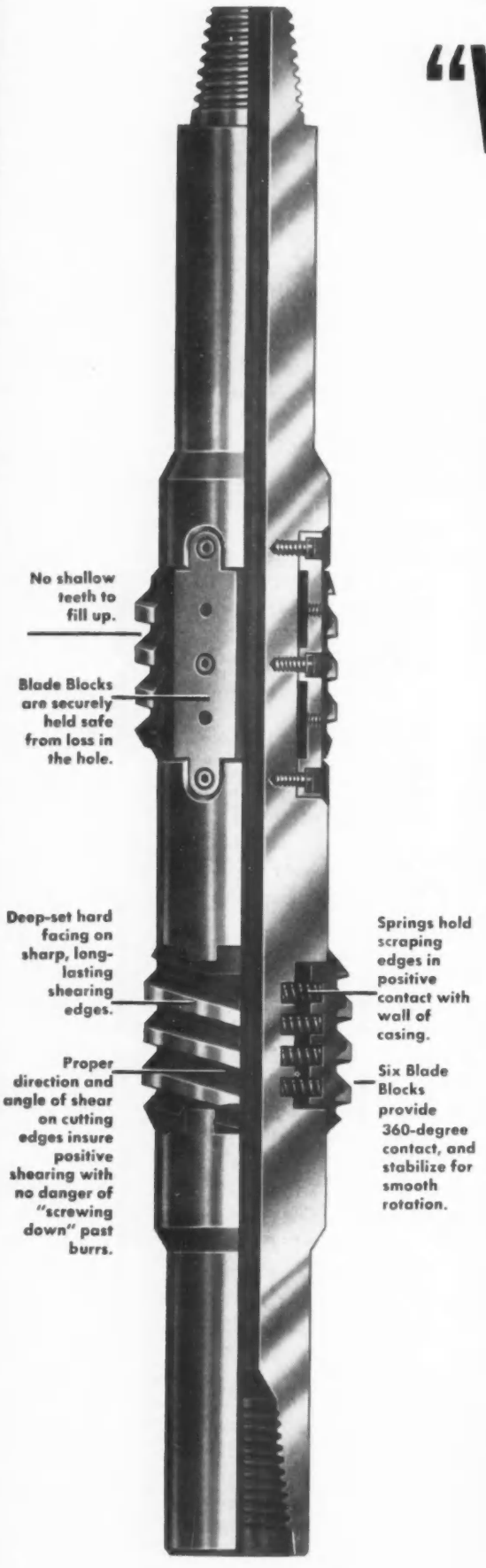
The Burgan field has four producing sands, three of which are well defined and most wells in the field produce from both the third and fourth sands.

This discovery is the first made in the Middle East by U. S. companies other than the so-called "Big Five" American companies that participate in production in Bahrain and Saudi Arabia and, together with two British and one French company in various groupings, own crude production in Iraq, Qatar and Kuwait. Aminoil has the concession to the sheik of Kuwait's one-half interest in the Neutral Zone and Pacific Western holds the concession in the Saudi Arabia half of the area.

This discovery has numerous ecomic implications, the most important of which are:

- It was made at a time when petroleum availability—particularly production from the Middle East—is growing considerably faster than demand. Economically, the discovery came two years too late. In 1951 every producible barrel of oil was needed by the western world to cope with shortages created by the shut-down in Iran.
- It was made at a time when there is considerable pressure on world crude prices due to ample production.
- It creates the problem of finding markets for the Neutral Zone production at a time when European and Asian nations have ample crude from sterling sources available. It will be impossible to market additional dollar oil abroad. Additional production in the Middle East, however, bringing more pressure on prices could be a bonanza to crude buyers on the U. S. East Coast but certainly work to the disadvantage of domestic American producers and the owners of the Neutral Zone production.

How is the
"Working Surface"


No shallow teeth to fill up.
Blade Blocks are securely held safe from loss in the hole.
Deep-set hard facing on sharp, long-lasting shearing edges.
Proper direction and angle of shear on cutting edges insure positive shearing with no danger of "screwing down" past burrs.
Springs hold scraping edges in positive contact with wall of casing.
Six Blade Blocks provide 360-degree contact, and stabilize for smooth rotation.

Baker Model "C"
ROTO-VERT Casing Scraper
Product No. 620-C

Unless the inside of your casing—the vital "working surface"—is clean and smooth, there is always a possibility of trouble in future operations. Burrs from gun-shot perforations, hardened cement or mud, and even mill scale are all dangerous when the time comes to run testers or swabs, or to set cement retainers or packers of any description.

The Baker Model "C" ROTO-VERT Casing Scraper removes all obstructions from the inside of the casing, leaving it clean and smooth. Burrs or imbedded bullets are sheared away; cement, mud and scale are scraped away, so that any down-hole work can be safely done at once, or during the years to come.

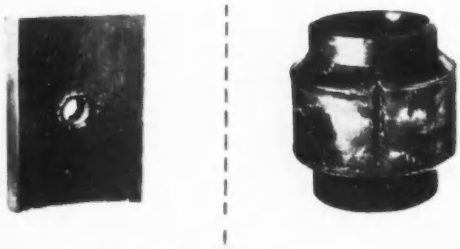
SCRAPE WHILE DRILLING OUT

The ideal time to use the ROTO-VERT Casing Scraper is during the drilling out of cement, at which time it is run as a "follow-up" behind the bit. Thus in a single run you can also remove all hardened cement, mud, burrs and scale which might *later* damage swabs or testers, and cause packers or retainers to set prematurely—or never set at all.

EASY TO RUN—LOW-COST RENTAL

The Baker ROTO-VERT Casing Scraper is simple to run, and will effectively clean the inside of the casing when either reciprocated or rotated.

No service man is required, and the low rental cost is paid for many times over by freedom from future damage to bailers, swab rubbers and packers, as well as by the elimination of future delays and re-running expense.



SEE HOW THIS BURR . . . ripped this packing element,

and how ROTO-VERT could have prevented the damage by shearing away the burr.

...of your casing?

WHY THE ROTO-VERT IS SAFE AND SIMPLE TO USE AND COSTS LITTLE TO RUN

This helix-blade-type scraper can be either "spudded" (reciprocated vertically) or rotated for the removal of gun-perforation burrs, imbedded bullets, cement sheath or other obstructions from the inside of the casing.

The body is machined from bar stock, with two sets—a total of six—rugged Blade Blocks positioned for overlapping, 360-degree scraping coverage. The most outstanding feature of the Blade Blocks is the direction and angle of shear of the scraping edges. The slant of these scraping surfaces is in a direction OPPOSITE from that encountered on other helix-blade-type casing scrapers, and the shearing edge is set at a smaller angle from the horizontal. These features result in the fact that the ROTO-VERT will not "screw" down past burrs as it is being rotated. And when it comes to removing cement sheath or other casing coatings, you are assured of actually removing the material with the ROTO-VERT, instead of merely cutting threads in it.

REMOVING PERFORATION BURRS AND BULLETS

On rotary rigs best results are obtained by first running the ROTO-VERT Scraper *completely through* the perforated section WITHOUT ROTATION. This initial run will either shear or knock off the majority of imbedded or projecting bullets, and shear away most of the ragged perforation burrs. Then pull back the ROTO-VERT Scraper and rotate it through the perforated section. This second run permits the helix scraping edges to shear to their fullest extent, leaving perforation holes practically flush with the casing I.D., and the entire perforated section clean and restored to gauge.

When running the ROTO-VERT on tubing, or on a wire line (with suitable sinker bars and jars) it is merely run through the perforated section, then pulled back and run through again. If the ROTO-VERT runs through the perforated section smoothly (as indicated by checking the weight indicator) complete burr and bullet removal is a certainty.

REMOVING CEMENT SHEATH, HARDENED MUD OR SCALE

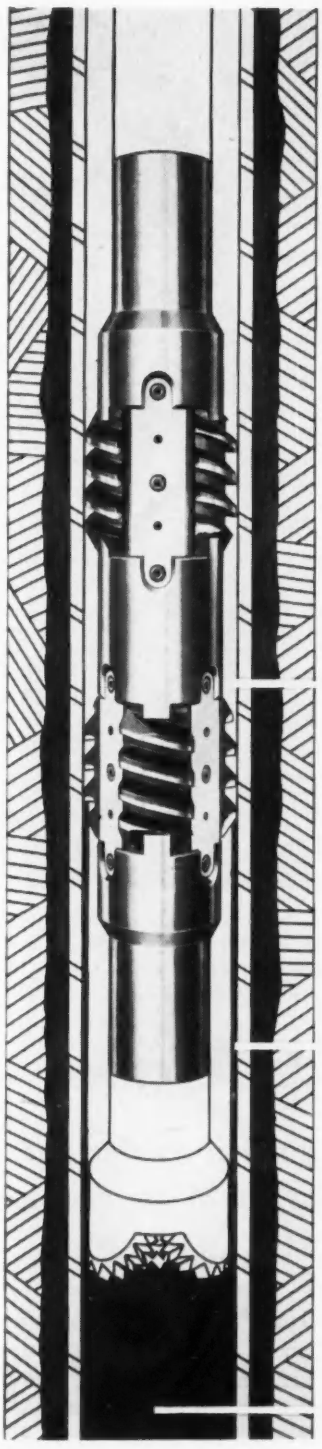
Recommended procedure is to install the ROTO-VERT just above the bit when drilling out cement, to remove the thin sheath of cement always left, even though a maximum gauge bit is being used. Hardened mud, cement, paraffin, or mill scale are completely removed in a single run.

On old wells (or when rotary equipment is not present) the ROTO-VERT, run on tubing, will successfully remove various casing coatings WITHOUT ROTATION. A spudding action usually quickly clears up any rough or stubborn "tight spots."

A modified ROTO-VERT can be furnished to operate with equal success when run on a wire line equipped with sinker bars and jars.

BAKER OIL TOOLS, INC.

HOUSTON • LOS ANGELES • NEW YORK



Even when a maximum gauge bit is used for drilling-out, a thin sheath of hardened cement remains to interfere with future operations. To visualize how ROTO-VERT removes this sheath, see left.

All cement, scale, burrs, etc., have been removed by the ROTO-VERT Scraper, and the vital "working surface" of casing is left clean and smooth.

This thin sheath of hardened cement always remains after the bit has passed.

Cement to be drilled out.

Cross-section of casing showing gun-perforation burr, before scraping . . .

and after ROTO-VERT was run.

This brittle cement sheath prevents the slips of pack-off tools from gripping the casing.

. . . Here is cut section of the same casing showing how slips tried, *unsuccessfully*, to set against the cement sheath.

Call Baker

for consultation and service on BAKER ROTO-VERT Casing Scrapers

ARAB ROUSTABOUTS at work on Well 4 of Arabian American Oil Company at Dhahran, Saudi Arabia.

Saudi Arabia and Bahrain . . .

. . . Production reaches peak of 824,756 barrels daily . . . fourth largest of any nation.

IN ABOUT THE same span of time required for man to reach maturity, the desert kingdom of Saudi Arabia has moved ahead many centuries from a near barren land of nomadic people to a nation reaching for industrial maturity. It still has a long way to go, but the results brought about in the past two decades by the partnership of the Saudi Arab Government and Arabian American Oil Company show promise that the goal of King Ibn Saud to mold a modern nation out of an ancient civilization will be reached.

Last May 29 was the 20th anniversary of the entry of American oil men into Saudi Arabia. And in the slightly more than 15 years since the first commercial discovery was made at the Damman Dome on March 3, 1938, crude production from Saudi Arabia has mounted up to become the largest in the Middle East and the fourth largest of any nation. Production hit a peak of 824,756 barrels daily last year, and since 1951 Arabian American has been the leading producer of crude this side of the Iron Curtain.

While production from the presently developed Arabian fields is at approximately the maximum efficient rate, potential production from all of the discovered, though not fully developed, fields is considerably greater. Production now comes from three fields and part of a fourth field, which together comprise about half, 285,000 out of 562,000, total proved acres contained in eight known fields in the nation. Only one area of the three comprising the vast Ghawar field is now being produced.

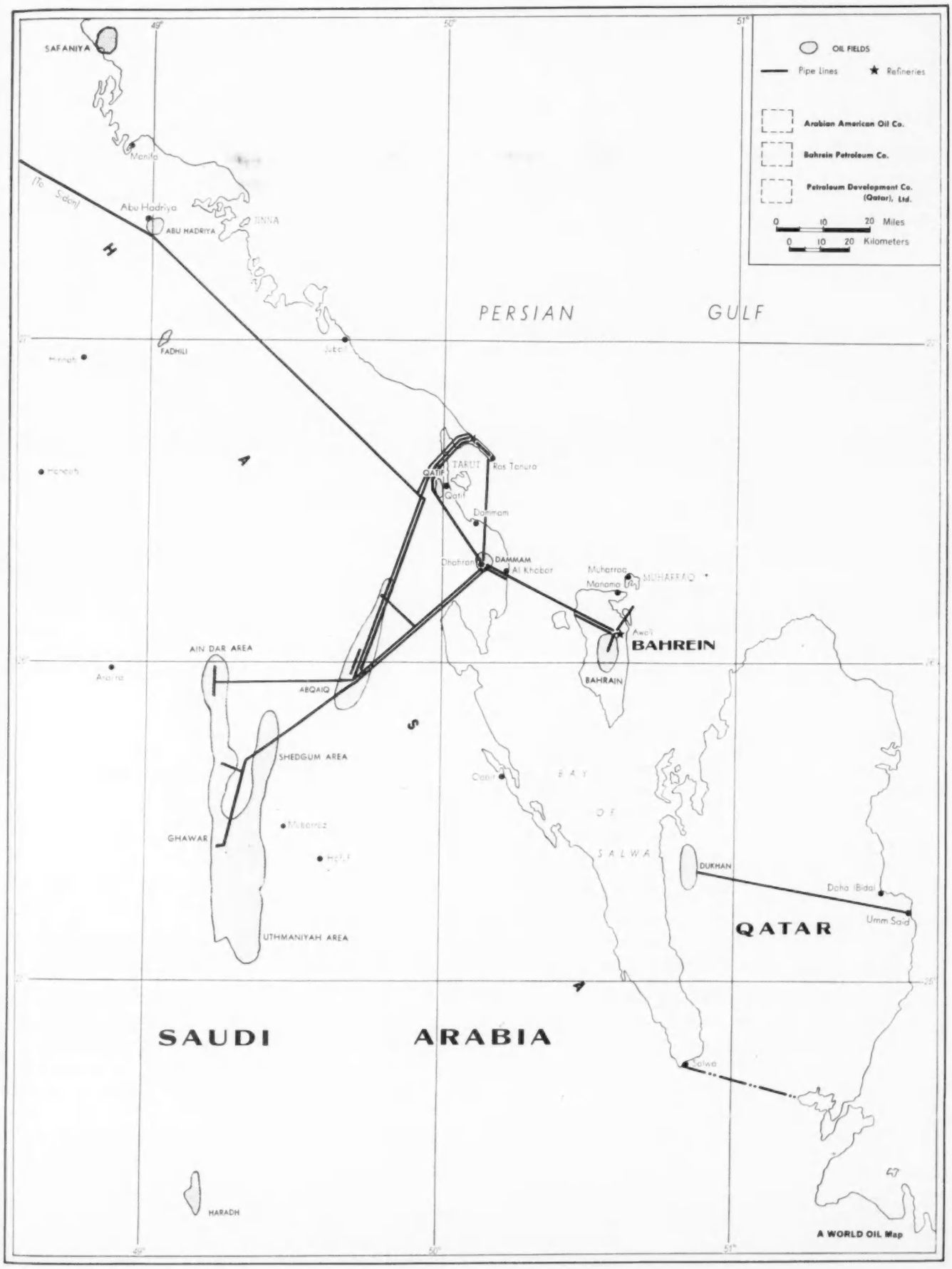
Future Doubtful. While annual crude output has bounded up from just under 8 million barrels in 1944, when operations were resumed after a near standstill during the war, to 301.8 million barrels last year, a future trend of growth in Saudi Arabian production of a smiliar magnitude is doubtful. Markets are the limiting factor, and world demand appears to be leveling off to a more modest annual expansion of from 5 to 6 percent. Also increasing quantities of sterling oil, notably from Kuwait and Iraq, are available to many European and Asian nations short of dollar exchange needed for the purchase of Arabian oil.

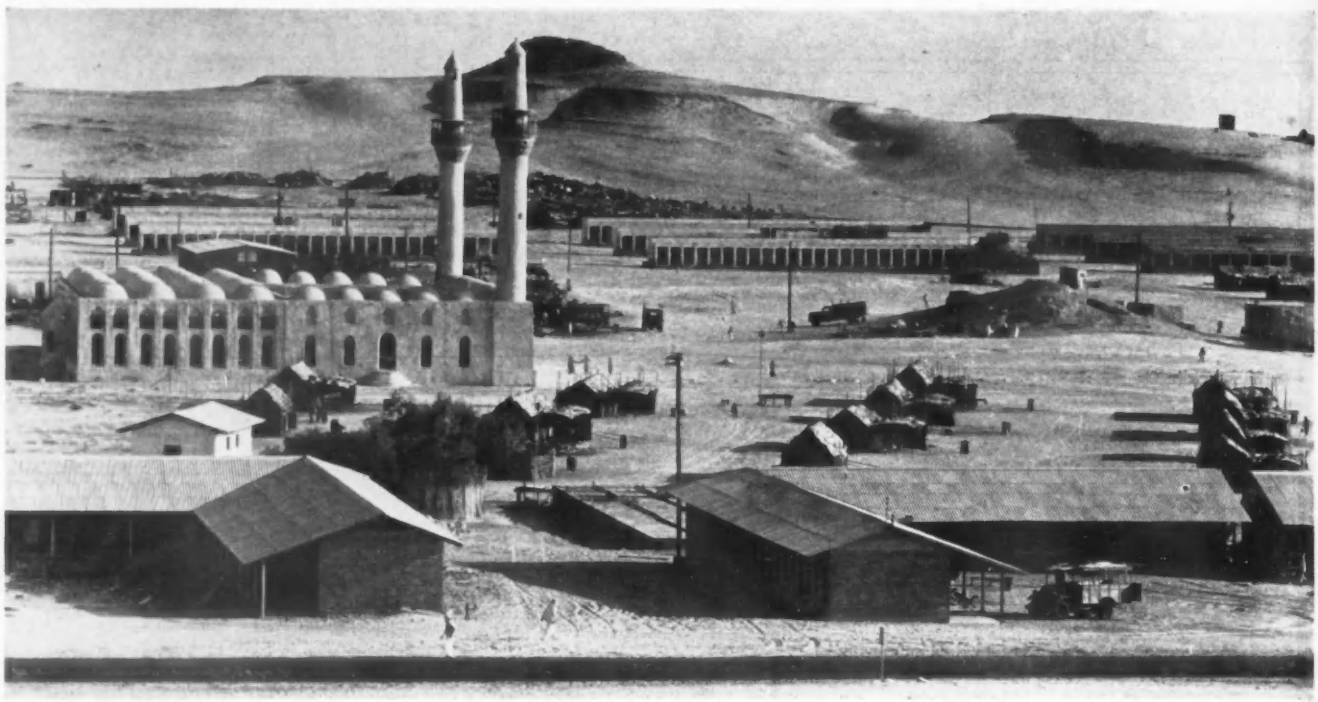
Aramco—whose ownership is held by Standard Oil Company of California, Standard Oil Company (New Jersey) and The Texas Company, each with a 30 percent interest, and Socony-Vacuum Oil Company with a 10 percent share—is a dollar oil producer even though its primary markets through its owners' sales are in soft currency areas. For example, of the total shipments from Saudi Arabia last year of 239 million barrels of crude and 57.9 million barrels of refined products, only 29.4 million barrels of crude were exported to the U. S. Some payments in dollars are derived from shipments to soft currency countries.

To strengthen the competitive position of Saudi Arabian oil in soft currency areas, Aramco has tried to shift its purchasing to sterling countries, but dollar area buying by the company continues to constitute the largest part of its purchases. In 1952 Aramco's outlay for commodities, freight and related items totaled $106.8 million, of which $81.3 million was spent in the U. S. and Canada and $25.5 million in soft currency areas—Europe, Australia, New Zealand, the Near East and Middle East.

In the previous year such expenditures were divided $43.7 million in the U. S. and Canada and $23.3 million elsewhere. A more pronounced shift of purchases in non-dollar areas,

SAUDI ARABIA–BAHRAIN ISLAND





Standard Oil Company (N. J.) Photo

RESIDENTIAL AREA for Arab employes at Dhahran. Dhahran is headquarters for Arabian American Oil Company. Mosque shown at left is located in center of the camp.

however, may be required in future years if present world monetary problems continue.

Wages increase. Just as the significance of Arabian oil can be measured in world commerce by the rising production trend, general benefits derived from its production on the economic growth of Saudi Arabia also can be measured in oil terms: The rising demand for petroleum products within the country (one million barrels in 1952, double the 1950 consumption) and increase in minimum wages paid by Aramco—from three Saudi riyals in 1950 to five Saudi riyals last year.

In addition to benefits earned directly by Aramco employes, Aramco's payments to local Saudi contractors in 1952 more than doubled the payments in 1951, and the number of individual contractors to the company expanded from 117 to 149.

Other such diversified activities of the company for the public benefit of the country include the supervision of an experimental farm, development of new townsites, locating and drilling water wells, industrial training to employes, technical advice and assistance to Arabian business enterprises and the broad health program. At the start of 1953, Aramco passed to the government the management of the 358-mile Saudi Government Railroad which was completed in 1951.

Petroleum-wise Saudi Arabia and the nearby island of Bahrain make up an economic unit; the ownership of Aramco until December, 1948, was held by California Standard and Texaco which, through Bahrain Petroleum Company, own the producing and refining concession at Bahrain.

Bahrain's part in the petroleum economic pattern has been producing and refining its domestic production and filling out the largest part of its refinery requirements with Saudi Arabian production. Of Aramco's total crude movement of 301.2 million barrels from field storage in 1952, 58.9 million barrels were shipped to Bahrain (47.5 million barrels via submarine pipe line and the remainder by tanker). Of the remaining Aramco total crude movement, 115 million barrels were shipped through Trans-Arabian Pipe Line to the Mediterranean, 62.2 million barrels were processed at the Ras Tanura, Saudi Arabia refinery and 65.1 million barrels were shipped in tankers from the Persian Gulf to other areas for refining.

Bahrain Booms. Bahrain, which prior to the discovery of oil in 1931 was chiefly dependent on a declining pearl industry and boat building has made substantial gain as a nation. More than 10 percent of all male Bahrainis, or about 6000, are employed in the oil industry and from the petroleum industry the government of Bahrain has found the means to build roads, hospitals and to establish an educational system. Many former Bapco employes have become independent businessmen operating in such fields as bus transportation, water distillation, welding, contracting and food wholesaling.

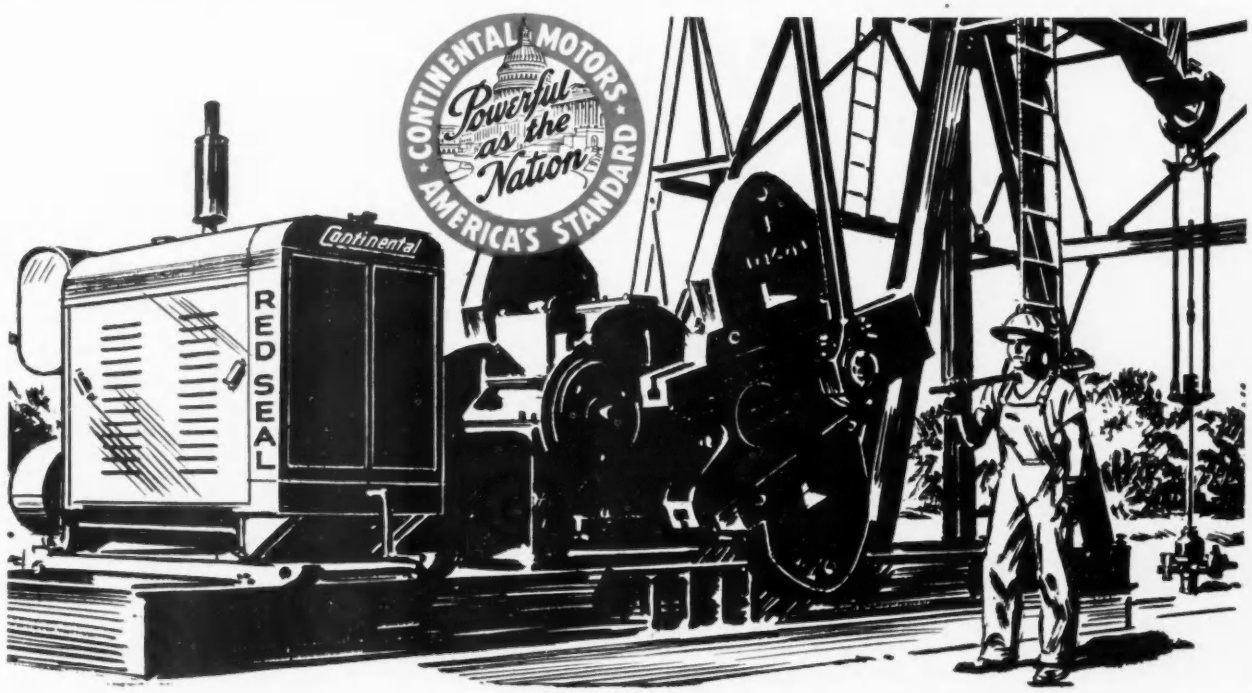
The share of net income of the operating companies in Saudi Arabia and Bahrain accruing to the governments is 50 percent. This equal split has been in effect in Saudi Arabia since January 1, 1950, and in Bahrain since January 1, 1952. While there are no current demands for changes in basic principles in the agreement, additional cutbacks in producing rates in Saudi Arabia should they they be severe enough, could lead to some possible revisions which would offset the reduction in income payable to the governments.

Drilling and Production in Saudi Arabia reached record levels in 1952 with the completion of 40 wells and the production of 301,860,885 barrels for a daily average of 824,756 barrels.

After the peak requirements incident to the closing down of operations

MORE AND MORE OF THE WORLD'S WORK DEPENDS ON CONTINENTAL POWER

Whether or not a piece of power equipment turns out to be a "good buy" depends in large degree on the skill with which the engine is matched to the rest of the machine. That is why it's wise, when buying such equipment, to choose one of the leading makes—a make with Red Seal power. In that way, you get an engine which is not only tailored to its job, but backed by specialized experience dating from 1902.



PARTS AND SERVICE EVERYWHERE

Continental Motors Corporation
MUSKEGON, MICHIGAN

6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIFORNIA

in Iran in 1951 were passed, production of crude in Saudi Arabia tapered off during the final six months of 1952 from a peak of 899,031 barrels per day reached in June to 738,801 barrels daily by December. In early 1953, however, the downward trend had been reversed and output had increased gradually to 859,507 barrels a day in April.

The reduction in the rate of annual growth of petroleum demand in the world and the mounting production from other nations—particularly soft currency producers—indicate 1953 production in Saudi Arabia will not exceed the record established last year.

Production in Saudi Arabia comes from four fields: Abqaiq (discovered in 1941), the largest producer with a daily average of 421,778 barrels at the end of 1952 from 56 wells; Dammam (1938), the first field in the country with a daily average of 63,565 barrels from 25 producing wells; 'Ain Dar area of the Ghawar field (1948), with a daily average output of 304,057 barrels from 42 wells; and Qatif (1945), with a daily flow of 35,356 barrels from nine wells.

Other proved fields and producing areas not on production are: Abu Hadriya (1940), Fadhili (1949), Shedgum area of Ghawar field (1952), 'Uthmaniyah area of Ghawar field (1951), Haradh (1949) and Safaniya (1951).

The total number of producing wells at the end of last year amounted to 135 (including three gas wells) and represented an increase of 17 (including one gas well) over the previous year. By the time of the fifteenth anniversary of the discovery of oil in Saudi Arabia last March, cumulative production from all fields had reached 1,344,825,681 barrels.

Drilling Activities by Aramco in 1952 were concentrated in the offshore Safaniya field and in the Ghawar field, which consists of the 'Ain Dar, 'Uthmaniyah and Shedgum areas. Designation of the Ghawar field was made last year as the result of indications that the three producing areas constituted a continuous oil accumulation, rather than three separate fields.

At the end of 1952 the proved area of this field totaled 288,100 acres with development still in progress in the 'Uthmaniyah and Shedgum areas. Production in the field is from the Arab lime of Jurassic age and the average thickness of the pay zone ranges from 256 feet at 'Uthmaniyah to 270 feet at 'Ain Dar and 271 feet in the Shedgum area.

Of the 40 wells drilled in Saudi Arabia in 1952, 35 were oil producers. This compared with 32 completions in 1951, of which 31 produced oil. Total footage drilled in 1952 was 273,751 feet, compared with 215,779 feet in 1951. Thirty-four of the wells completed last year were in the Ghawar field (17 in 'Ain Dar, 14 at 'Uthmaniyah and 3 at Shedgum) and six at Safaniya.

The drilling program in 1952 resulted in the largest annual extension to proved acreage, increasing the total proved to oil production by 225,000 acres to 562,700 acres. Present drilling operations in Saudi Arabia consist of a diesel-electric drilling barge operating offshore in the Safaniya field, two rigs in the Shedgum area, one at 'Ain Dar and three at 'Uthmaniyah. Two other rigs have been kept on workovers.

Field facilities in Saudi Arabia include four gas-oil separator plants in the 'Ain Dar field, each with a capacity of from 100,000 to 130,000 barrels daily; one separator at 'Uthmaniyah; three at Abqaiq; one at Dammam, and three at Qatif. Stabilization plants are located at Dhahran and at Abqaiq.

Aramco expects to have in operation later this year the Abqaiq field pressure maintenance plant, a $20 million installation expected to enable an increase of 100,000 barrels daily over the present maximum efficient rate of production. High-pressure gas from Abqaiq's three gas-oil separators will be further compressed and re-injected into the field through two wells near the center of the field. The plant is designed to re-inject a maximum of 150 Mmcf. daily.

Production of crude on Bahrain Island over the past several years has been fairly steady at an annual rate approximating 11 million barrels. This field, which entered its 21st year last May 31, produced 11,004,278 barrels in 1952, boosting the cumulative total to nearly 143 million barrels. The drilling program in this field has been to maintain production at about 30,000 barrels daily. The field, which covers about 10,000 proved acres, had 79 oil wells, three gas wells and eight observation and gas injection wells at the end of 1952. Seven completions were made last year and six field wells are planned for completion in 1953.

Exploration Activity. While the discovery of oil in the Shedgum area of the Ghawar field highlighted exploratory operations in Saudi Arabia in 1952, Aramco continued extensive exploration activities in many parts of its approximately 400,000-square-mile concession area. Regardless of the company's two decades of work in Saudi Arabia, there are still vast areas within the concession that have not been thoroughly surveyed, and only a small portion has been tested for oil.

Detailed studies were continued over broad areas in Al Hasa, where all present production is located, and in addition extensive reconnaissance activity was conducted in Rub' al Khali, in the Gravel Plains, northern Summan, and in the northern and northwestern parts of the concession area.

In general, work was divided between reconnaissance studies of the more remote areas and detailed studies in Al Hasa. A reconnaissance gravity meter and magnetometer party were added to the exploratory forces. At the end of the year three parties were engaged in surface mapping, two in triangulation and leveling, three in gravity meter work, two in seismograph work, and three in structural drilling with seven rigs.

No exploratory drilling was conducted on Bahrain Island in 1952 nor was any planned for 1953.

Pipe Line Expansion. Pipe line capacity from the oil fields to connections with the Trans-Arabian Pipe Line to the Mediterranean, the Ras Tanura refinery of Aramco and the Awali refinery of Bahrain Petroleum on Bahrain Island has been increased substantially. Construction in 1952 included nearly 75 miles of trunk crude oil lines, ranging in diameter from 12 to 31 inches; 62 miles of field gathering lines connecting 19 new wells in Saudi Arabia; and 18 miles of 20 to 24-inch gas transmission lines as part of the pressure maintenance program in Aramco's Abqaiq field.

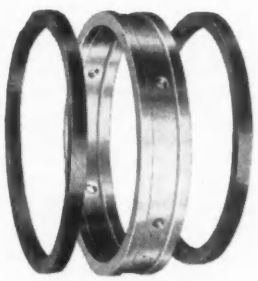
FEWER Shut-Downs

for slush pumps equipped with...

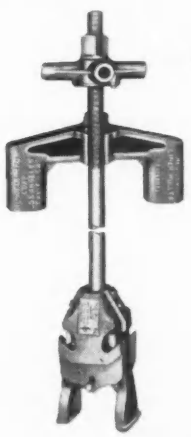
RED DEVIL PRODUCTS

For many years, Red Devil replaceable parts for slush pumps and special parts for circulating systems have been in use throughout the world for shallow and deep, high-pressure drilling. Drilling men admit that you can't buy anything finer *at any price* than Red Devil products.

1. **"DIA-HARD" LINERS** are forged in one piece from top quality alloy steel and hardened with a deep high-carbon case to resist wear under the most severe abrasive conditions. Bore is precision honed, and accurate outside dimensions insure a perfect working fit with positive sealing.

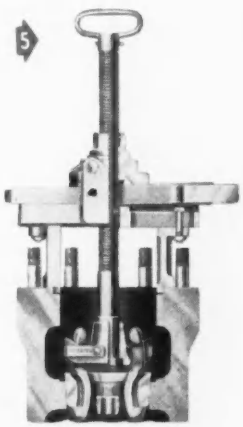


2. **LINER PACKING ASSEMBLIES** for pumps drilled with "telltale" holes consist of two "Dia-Tex" *oil and heat resisting* sealing rings separated by a *corrosion proof* steel lantern ring. Liner packing assemblies or "Dia-Tex" sealing rings are available for all slush pumps.



3. **LINER PULLERS** are powerful, heavy duty tools capable of pulling the most obstinate liners. The "Universal Type" Puller (as illustrated) is designed for slush pumps. The "Expanding Grip Type" is for pulling thin wall driven tube-type liners, in small pumps.

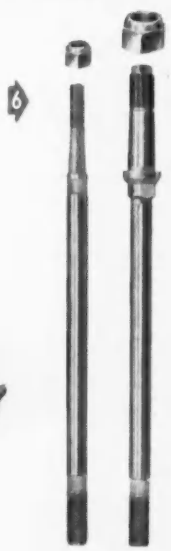
4. **SLUSH PUMP VALVES,** economically designed for high pressure abrasive service, consist of only 5 parts. Valve and seat are drop forged and processed for a deep high carbon case. "Dia-Tex" Inserts are oil and heat resistant and can be reversed when worn to double their long life.

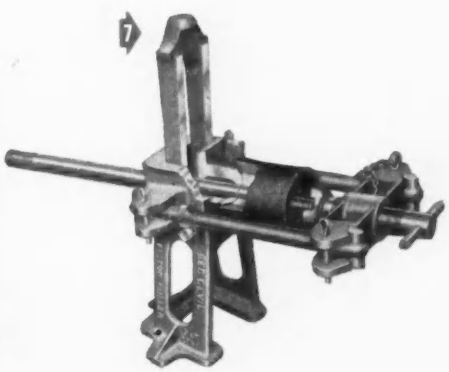


5. **VALVE SEAT PULLERS** provide a fast and positive means for pulling badly stuck valve seats by gripping the bottom rim of the seat. Eliminates the expense and hazards of removing seats with a cutting torch. All parts are made of highest grade alloy steel.

6. **"DIA-HARD" PISTON RODS** are tops where drilling is toughest because of the extreme hardness of the deep high-carbon wear resistant case. A tough core of high tensile strength insures against breakage. Available with API or "GT" Piston End Tapers.

7. **PISTON PULLERS** easily and quickly remove badly stuck pistons without injury to piston or rod. All parts are made from finest alloy steel, heat-treated for superior strength and endurance.





Red Devil Price Catalogs furnished on request

"Dia-Hard" Piston Rods	P-101	"Dia-Hard" Liners	P-120
Piston Rod Lock Nut	P-102	Liner Packing	P-121
Piston Pullers	P-106	Liner Pullers	P-122
Slush Pump Valves	P-110	Stand Pipe Outlets	P-130
Valve Seat Pullers	P-111	"Dia-Hard" Wash Pipes	P-140

Complete information in Composite Catalog. Red Devil Products are available through your own supply store

OIL WELL MANUFACTURING CORP.
6008 South Alameda Street, Los Angeles 1, Calif.
Cable Address "OWMCO"

Qatar . . . newest commercial oil producer in Middle East. Output up from 750,000 in '49 to 25,248,000 barrels in '52.

THE SANDY and rocky Sheikdom of Qatar, a small peninsula jutting out into the Persian Gulf from the Arabian mainland, is the newest commercial oil producer in the Middle East. In less than four years of output its crude oil production has jumped from 750,000 barrels in 1949 to 25,248,800 barrels in 1952 and the flow is moving higher this year. Last year's output was the equivalent of 68,986 barrels daily. And the rate in the first quarter of this year averaged 77,715 barrels per day.

Prior to the discovery of oil in Qatar in 1940 by Petroleum Development (Qatar), Ltd., a subsidiary of Iraq Petroleum Company, Ltd., the approximately 10,000 inhabitants of this peninsula, which is smaller in area than the state of Connecticut, occupied themselves with some fishing, a limited amount of pearling and harvesting the small date crop. It still is probably the most backward of all Middle East nations with oil production.

While it may be a long time before commerce and industry flourish in Qatar, there will be a substantial income each year from oil operations to provide educational and health facilities for the people. As a result of the 50-50 profit-sharing agreement signed last year, the absolute ruler, Sheik Ali Bin Abdullah Bin Qasim Al Thani received about $15 million from Petroleum Development in 1952.

Additional production will, of course, mean higher royalties. And the search for additional oil in Qatar and offshore areas is in full swing.

Iran . . . Mossadegh stands firm in row with British-controlled company. Output nearly 18 million barrels. No wells drilled.

SIGNIFICANT DEVELOPMENTS growing out of the expropriation of the properties of Anglo-Iranian Oil Company in Iran more than two years ago are four-fold:

- Aging Premier Mohammed Mossadegh has successfully for the present weathered the storm created by the nationalization and has emerged a more powerful political figure.
- Contrary to popular belief at the time, the shut down of the giant Iranian oil industry did not bring the nation to bankruptcy and thereby force it to come to terms. This proves indirectly, at least, that the substantial royalties paid Iran did not get past the pockets of top politicians.
- The National Iranian Oil Company so far has made no attempt to operate the industry other than on a token scale.
- The British Government has failed in its legal moves to block the sale of crude and refined products by Iran in world markets.

In effect, these results mean that a settlement with the British Government-controlled company is remote.

Its share of production in other Middle East countries and in the United Kingdom amounted to nearly 196 million barrels last year. Based on production trends in early 1953, Anglo-Iranian estimates its production this year will be about 267 million barrels, not too far below the 317 million barrels the company produced in 1950 when Iranian operations were at a peak.

In 1952 no wells were drilled and the productive effort consisted of output of 17,292,842 barrels from 18 of the 87 producible wells in Iran. More than half of the crude produced was recycled into the reservoir resulting in a net crude oil output of 7,776,867 barrels, or a daily average of 21,248.

Turkey . . . One major field produced 150,000 barrels of crude in 1952. Production nil from two other prospective areas.

TURKEY'S SINGLE major oil field, Raman in the Siirt Province, produced 150,000 barrels of crude during 1952, for a daily average yield of 410 barrels. In the previous year, the field produced 97,000 barrels. Two other prospective producing areas—Adana and Garzan—yielded no crude during the year. Garzan contains two producing wells which are temporarily shut down.

Last year's output shoved the nation's cumulative production figure to 396,000 barrels. Proved crude reserves were put at 75 million barrels as of January 1, 1953.

At year's end, Raman field had ten producing wells. Footage drilled during the year amounted to 41,325 feet as nine wells were completed. Three oil wells were completed at Raman for a total footage of 15,000 feet; two capable of producing at Garzan for a total of 10,000 feet; four exploratory tests elsewhere for a total of 16,325 feet. All wildcats were dry.

Of major importance to the nation's oil possibilities was the decision by the government on Nov. 22, 1952, to place its development work in the hands of private foreign enterprise.

IT ALL BEGAN IN '33

another important story about

4-CYCLE V-ANGLE COMPRESSORS

Repeated installations of Ingersoll-Rand Gas-Engine Driven Compressors keep pace with steady growth of Lloyd Corporation, Ltd. of California Gas Booster plant

When Lloyd Corporation, Ltd. back in '42, built its booster plant in Ventura, Cal., it selected a 300-hp Ingersoll-Rand XVG compressor for gas-lift service. The XVG had revolutionized oilfield practices when it was introduced in 1933 as the first V-angle gas-engine-driven compressor, and had quickly achieved world fame and acclaim for its outstanding performance in all kinds of services.

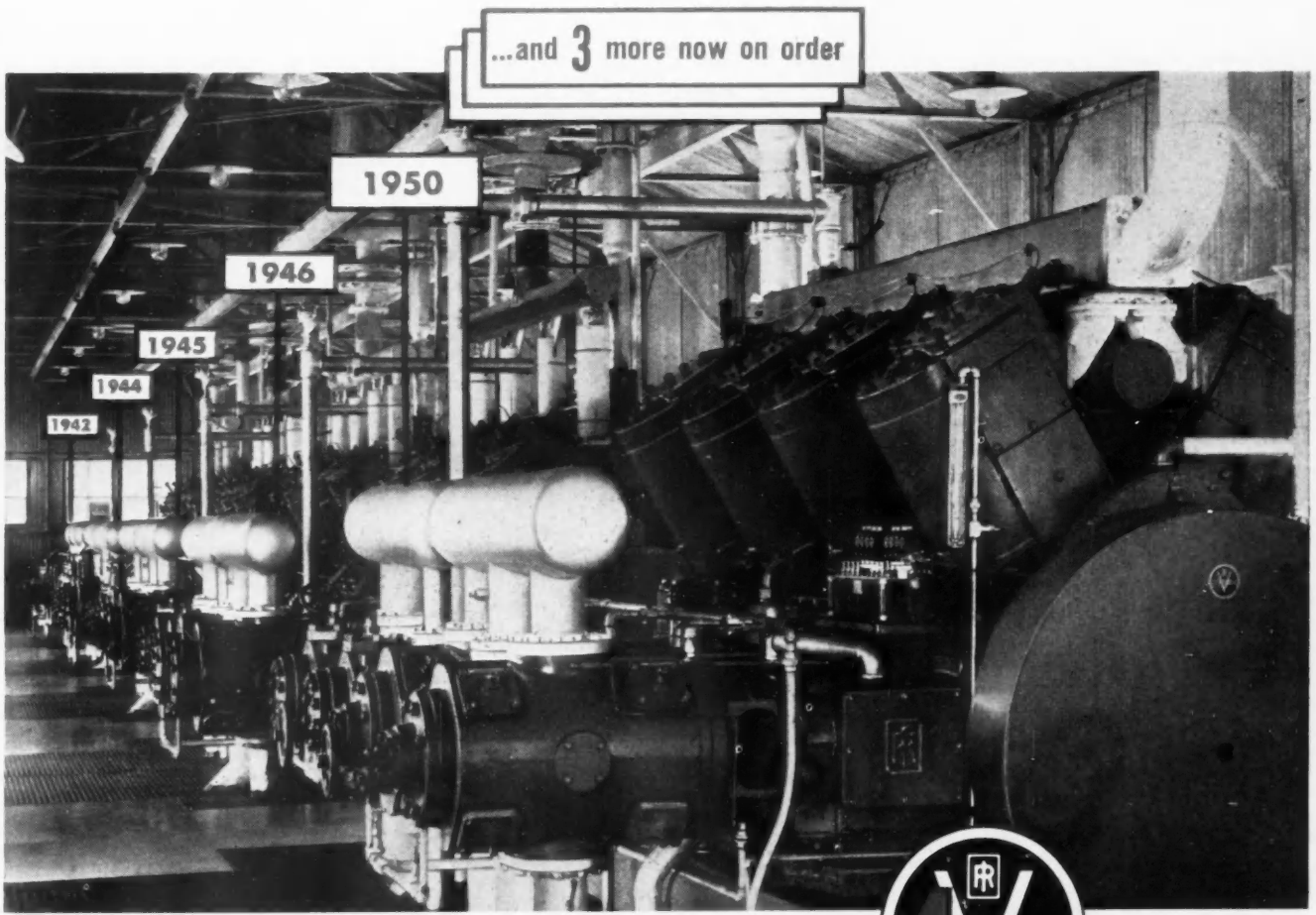
After two years' first-hand experience with its XVG, Lloyd installed another one . . . and additional units in '45 and '46.

Then in 1950 it purchased a different compressor. This machine was also an Ingersoll-Rand, and fit into the same amount of space . . . had the same number of cylinders. And it had all of the important, proven, and desirable features of the XVG.

But it had 45% more capacity. It incorporated many new and advanced design features that make it an even better machine. This was the modern design of the famous XVG. It is known as the SVG . . . made in three sizes, 330, 440 and 550 horsepower.

Lloyd liked the SVG, too. They ordered three more, two for '52 and one for delivery in early '53.

Let your I-R representative tell you more about the SVG and the other units in the full line of Ingersoll-Rand 4-cycle gas engines and compressors.



Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 840-6

4-CYCLE

COMPRESSORS • AIR TOOLS • ROCK DRILLS • TURBO BLOWERS • CONDENSERS • CENTRIFUGAL PUMPS • DIESEL AND GAS ENGINES

Burma . . . Production at Chauk and Lanywa during '52 near 1 million barrels.

APPROXIMATELY ONE MILLION barrels of crude was produced from Burma's wells at Chauk and Lanywa during 1952. This amounted to 355,059 more than the output for the previous year, tantamount to a 55 percent rise. The rise in the daily average production amounted to 970 barrels—from 1762 barrels a day during the previous year to 2732 barrels daily last year.

Cumulative production at the close of 1952 was 290,600,000 barrels.

Continuing unsettled conditions in Burma prevented the operation of many oil areas and limited exploratory efforts. Despite these hampering circumstances, a limited amount of new production drilling was carried out at the Chauk oil field.

Production from several wells in the Chauk and Lanywa fields is refined domestically, and the output of field wells is limited by the capacity existing for the transportation of products. A small quantity of crude has been taken from Yenangyaung by local operators. Unsettled internal conditions at Yenangyaung prevented activity there during the previous year. However, prospecting efforts were again impossible during 1952.

The construction of a new refinery at Chauk was continued throughout the year.

Three British companies—Burmah Oil Company (Burma Concessions), Ltd., Indo-Burma Petroleum Company and British Burmah Petroleum Company own and operate the Central Burma oil fields jointly as Oil Concessions, Ltd.

India . . . Last year's output up 90,000 barrels or 4.7 percent over 1951 total.

CRUDE PRODUCTION in India for 1952 totaled 1,990,000 barrels, which was 90,000 barrels—or 4.7 percent—more than the 1,900,000 accounted for during the previous year. This output reflected a daily average production of 5437 barrels, up 232 from a daily average in 1951 of 5205 barrels.

Digboi remained the only producing field, and development drilling continued throughout the year in both the older part of the field and in the more recently-discovered eastern extension.

Cumulative production to the end of 1952, including the small production from the abandoned Badarpur oil field, was 50,550,000 barrels.

An exploratory well at Nichuguard, 160 miles southwest of Digboi, failed to discover either oil or gas, and it was abandoned at 4655 feet. A second test well in this area was spudded in December, 1952.

At Nahorkatiya, west-southwest of Digboi, a well was begun to explore the Digboi producing horizons and lower beds on the northwest side of the Naga thrust. The well is on the Brahmaputra alluvium and was drilling ahead at 7000 feet at the close of the year.

Geophysical investigations were continued in the alluvial area to the east of Digboi. Standard-Vacuum Oil Company carried out a magnetometer survey over part of the West Bengal area during 1952.

The Assam Oil Company's refinery at Digboi continued operating throughout the year.

Assam Oil Company reportedly discovered oil in 1953 between 9000-10,000 feet at Nahorkatiya, 20 miles west of Digboi. Additional tests were scheduled.

Construction will begin in 1955 on the California Texas Oil Company's 10,000-barrel-a-day refinery at Vizagapatam, State of Madras. India's government gave Caltex a 25-year guarantee that the installation would not be nationalized. Standard-Vacuum Oil Company and Burmah Shell companies have been given similar assurances in their erection of two refineries at Trombay Island, near Bombay. Assam Oil's refinery at Digboi continued operating throughout the year.

Pakistan . . . 1952 yield 1,570,000 barrels.

ATTOCK OIL COMPANY, LTD., and Pakistan Petroleum, Ltd., combined to produce 1,395,784 barrels of crude in Pakistan during 1952. This yield amounted to a daily average of slightly more than 3800 barrels for the year. Total crude output for the nation in 1952 amounted to 1,570,000 barrels.

At year's end, Pakistan Petroleum had three wells operating in West Pakistan. The company drilled five wells for a total footage of 31,023 feet during the year. In West Pakistan, Pakistan Petroleum drilled two successful wildcats. One at Sui (Baluchistan) found gas, and indications were that a major gas field would be proved. A second well on the structure was drilling at the close of the year. Preparations were progressing rapidly to drill a test well at Zin, a structure 30 miles north of Sui. The second discovery was at Chak Naurang, ten miles from the Joya Mair field of Attock Oil. The crude is of heavy asphaltic type.

In East Pakistan, Pakistan Petroleum's Patharia Well 3 failed to find production, and Well 4 was drilling at the close of the year. At Patiya, 16 miles from Chittagong, an important deep test reached 7583 feet, where stuck drill pipe resulted in a difficult fishing job.

A gravity survey over a large exploration license in East Bengal was in progress at the close of 1952, and a seismic survey was scheduled.

Pakistan Oilfields, Ltd., a subsidiary of Attock Oil, was incorporated in 1950 after the issuance of Pakistan Petroleum (Production) Rules 1949 to enable it to apply for licenses and leases and exploration and development rights.

The company was drilling in two areas at Bains, where the initial well had to be abandoned at 3939 feet due to mechanical difficulties and where the second well was drilling ahead below 2075 feet, aiming for the Eocene limestones.

A test was also being drilled at Dhariala below 4150 feet. Heavy flows of saline water were encountered and attempts were being made to seal off the water to permit deepening in the search for oil rocks which may lie below the salt.

Caltex Photo

RUMBAI CAMP of Caltex Oil Company in Sumatra.

Indonesia and British Borneo . . . oil operations continue upswing. Combined production 102.5 million barrels.

PETROLEUM OPERATIONS in Indonesia, British Borneo and Netherlands New Guinea continue to reflect the strides made in the past six years in rehabilitating properties from destruction during the war. Combined production last year in the three producing areas totaled 102.5 million barrels, up 7.9 million barrels over 1951 with nearly all of the increase accounted for by Indonesia.

The Republic of Indonesia is the largest oil producer in the Far East, with its 1952 total a record 62.5 million barrels, or 171,548 barrels daily and its present total of about 210,000 barrels daily. While such would indicate a harmonious future, the present political and economic climate in Indonesia is just the opposite. The young republic's claims for ownership of the Dutch, or Western, portion of New Guinea clouds the future in that area also.

Petroleum is the only big industry in Indonesia and its future depends entirely on whether the Indonesians want industry. It is a nation that must import nearly every manufactured product required for its daily livelihood and petroleum exports are its chief means of earning exchange for payment of imports.

The relative high operating costs, high income and export taxes, however, are pushing petroleum operations in Indonesia close to the break-even point. This, with an unstable political climate, darkens what otherwise might be a bright outlook since the oil potential is considered good.

Lost Markets. Indonesian production before the war, when the present geographical area of 30,000 islands constituted the Dutch East Indies, met the petroleum requirements of many non-producing nations in the Far East. Restrictions that have prevented the oil industry in Indonesia from reaching its full potential since the war, however, has required marketing companies in the Far East to depend more heavily on crude from the Middle East, and, due to the uncertainties in Indonesia, they have built and are building refineries in the consuming Far Eastern countries. Indonesia, therefore, has lost crude and refined products markets that it will not be able to regain.

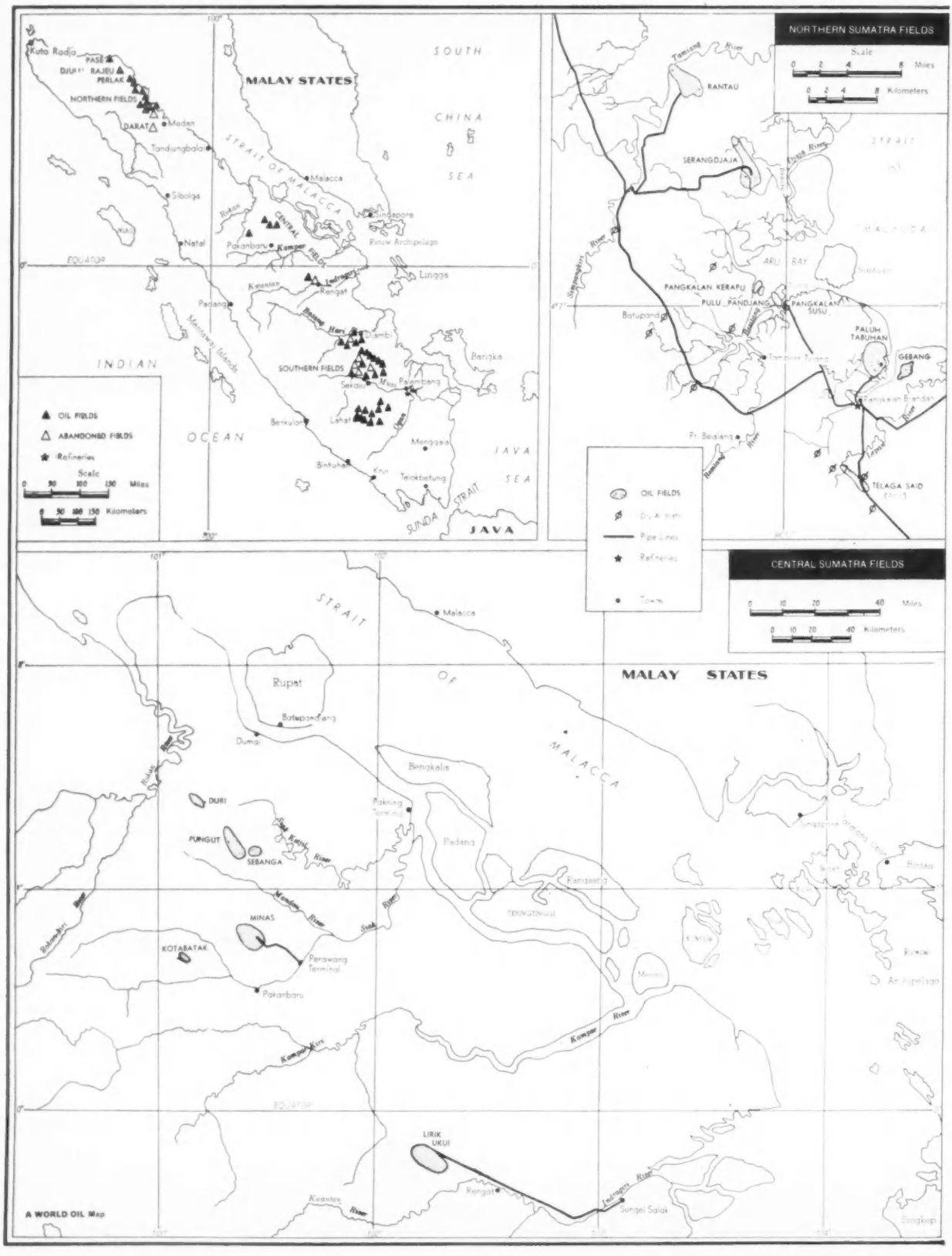
After four years of war with the Dutch, Indonesia gained its independent status in 1949. Since that time it has been unable to gain complete control of the area it claims as belonging to the republic. There are several insurgent governments, some of them communist-inspired. Recently the rise of a radical sect of Moslems, called Darul Islam which advocates a Moslem theocracy for Indonesia, has terrorized large parts of Java.

The nation plans to hold its first national elections in 1954, but meanwhile the provisional government of President Sukarno has had two successive cabinet collapses that threaten

the existence of the republic. The first occurred in early 1952, when the cabinet fell over the proposal to accept U. S. military air under the Mutual Security Act. This was replaced by the cabinet headed by Premier Wilopo of the leftist Nationalists party, whose government fell June 3 over the agrarian policies in North Sumatra.

Formation of a new government has met with extreme difficulty with a coalition of the Communists and Nationalists opposed to the Masjumi (Moslem) Party, the largest in the nation. President Sukarno ordered the formation of a "business" cabinet that would exclude the Masjumi and indi-

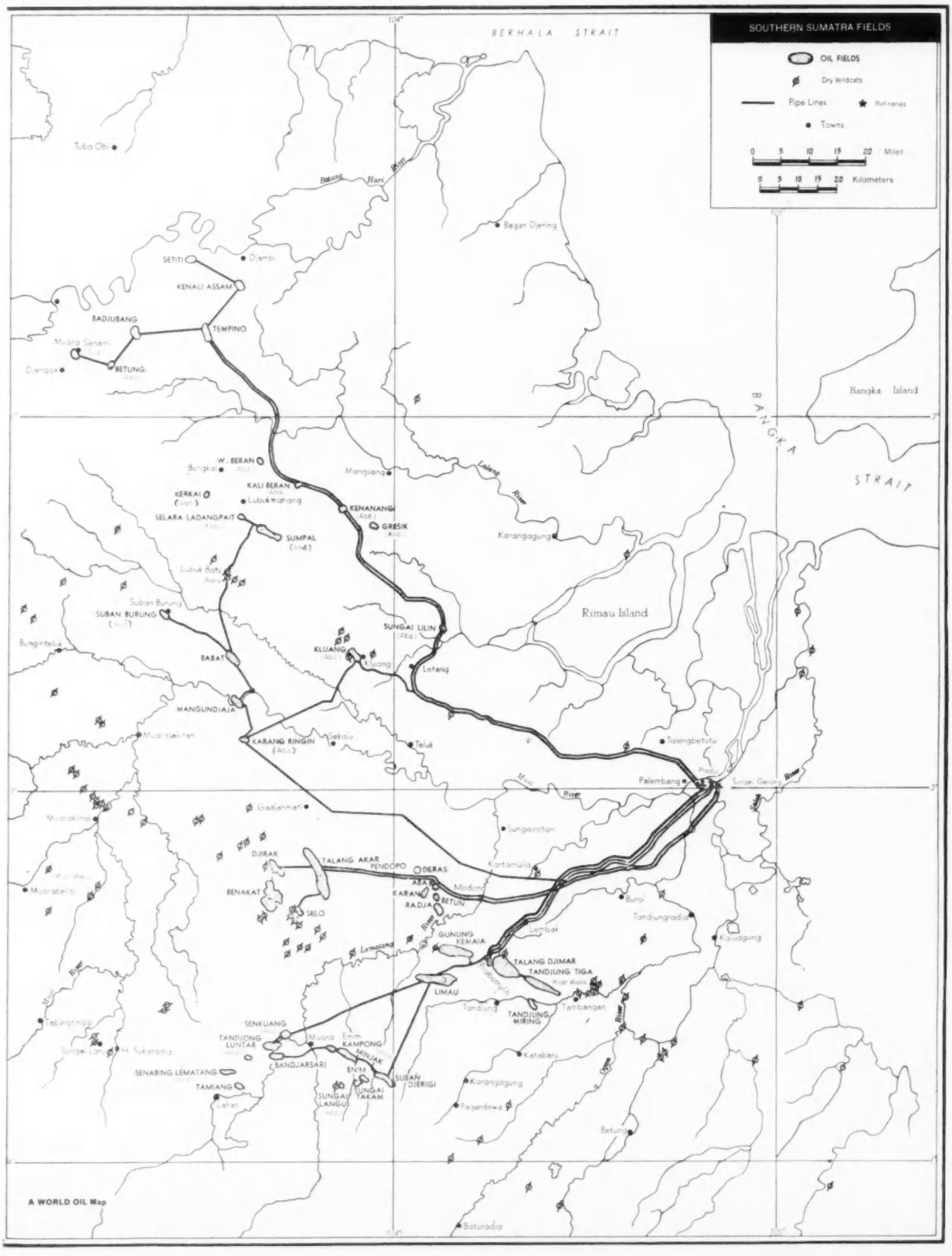
SUMATRA



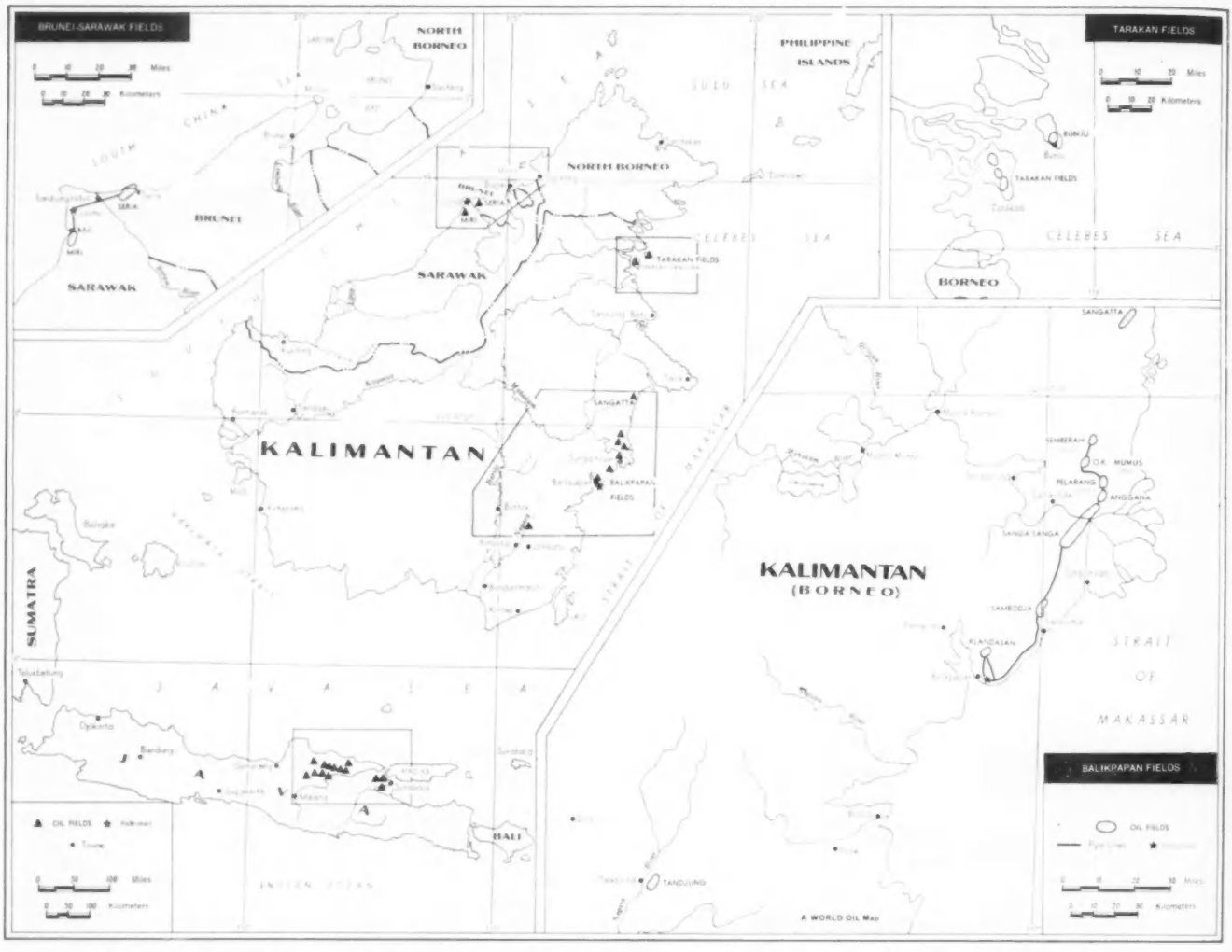
cations were that such a cabinet would continue the leftist policies of the former Wilopo government.

Major Problems. Four difficult problems facing the government are the opening of an embassy in Moscow, the return of the North Sumatran oil fields to the operating affiliate of Royal Dutch-Shell, the land distribution policies in North Sumatra, and a Japanese peace treaty. The Nationalists, which recently passed a law nationalizing the tin industry of Indonesia (which before the war supplied a quarter of the world's needs) has asked for nationalization of the North Sumatra oil fields and revocation of the "Round Table" or laissez-faire petroleum agreements between the government and the oil companies.

The first of these, with Standard-Vacuum Petroleum Maatschappij, expired in 1951 and since then no agree-



KALIMANTAN (BORNEO)–BRUNEI–SARAWAK



ment has been reached between the company and the government. Basically, the agreements permit the oil companies to retain most of their earnings from sale of Indonesian oil in foreign currencies. Such practice allowed flexibility in purchases of necessary materials and played an important part in the rapid rehabilitation of the nation's oil industry. Similar agreements with Caltex Pacific Petroleum Maatschappij and Royal Dutch-Shell expire in 1956 and 1954, respectively.

Indonesians charge that the agreements were made under pressure from the Dutch and have proved a disadvantage. They argue the nation's economy would benefit if petroleum operations were subject to the full income and export taxes and governmental exchange control, which oil companies stated would require payment of from 65 percent to 75 percent of their earnings to the government.

Such economic restrictions are opposed by the Masjumi Party, which has advocated return of the North Sumatra fields to Shell and encouragement of foreign capital to develop industries in Indonesia.

While the oil companies have continued an active drilling program in Indonesia, the economic and political outlook has discouraged additional capital investment in new refineries and pipe lines.

Affiliated companies of Royal Dutch-Shell are the largest crude producers in the Far East area of Indonesia, British Borneo and Netherlands New Guinea. Shell's share of the total production in the region amounts to 70 percent, or 72.6 million barrels for a daily average of 197,922 barrels. The Shell companies in British Borneo—British Malayan Petroleum Company, Ltd. (Seria field of Brunei) and Sarawak Oilfields, Ltd. (Miri field of Sarawak)—account for 104,510 barrels daily. N.V. de Bataafsche Petroleum Maatschappij (BPM) has a daily average production of 91,500 barrels in Indonesia, and the remaining production of the Shell companies comes from their 40 percent interest in Netherlands New Guinea Petroleum Maatschappij.

BPM's output from Indonesia in 1952 increased by 2.7 million barrels from 1951; the total Shell production from the two fields in British Borneo increased by 782,262 barrels and the company's share of New Guinea production declined slightly.

Stanvac Production. Standard-Vacuum Oil Company, through its operating subsidiary in Indonesia, N.V. Standard-Vacuum Petroleum Maatschappij, is the second largest producer in the area, with nearly all of its output presently limited to South Sumatra, though it has a 40 percent interest in the production

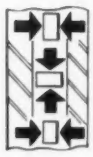
Every feature engineered for **QUICKER, SAFER PRESSURE CONTROL**

THE SHAFFER *Combination*
ROTATING BLOWOUT PREVENTER and STRIPPER

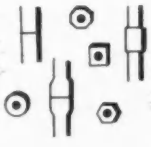
1 Space-Saving Compactness that permits installation under difficult space limitations. Even flow line connections are provided in the body—no spools or similar equipment are needed!

4 Continuous Pressure Protection is assured by the flexible Stripper Rubber which fits tightly around the drill string. No manual adjustments—no outside mechanical or hydraulic pressure—are necessary to maintain the seal while drilling, or while going into or coming out of the well.

2 Full Opening Bore is provided for passing bits, reamers and other abnormally large tools by simply rotating the bonnet 1/6 turn. This locks—or unlocks—the internal mechanism so that equipment that will pass through the casing will also pass through the unit.



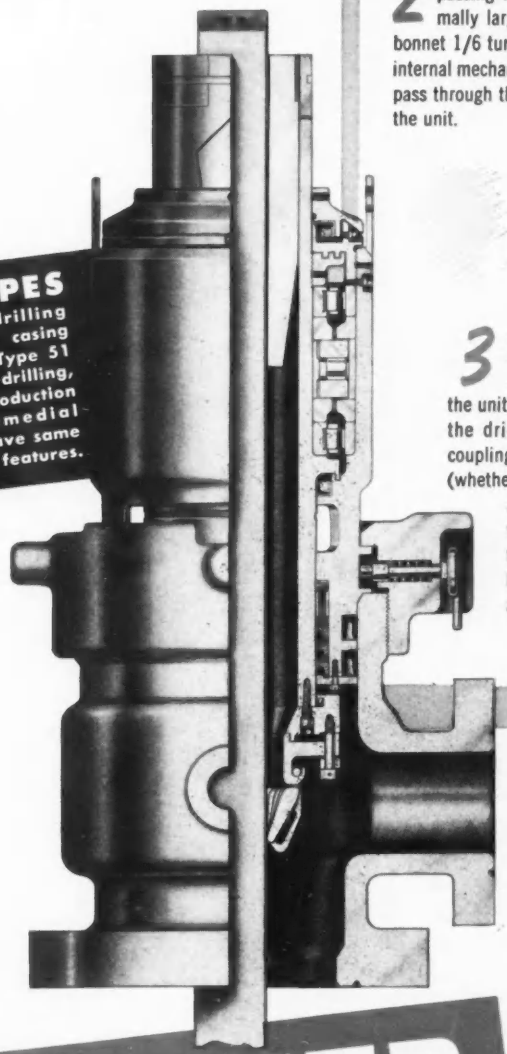
5 The Stripper Rubber Rotates with the kelly—not one inside the other. Therefore, wear on the Stripper Rubber is negligible and a pressure-tight seal is maintained. In addition, all rotating loads are carried on separate thrust and radial bearings to withstand a combination of horizontal or vertical loads. Bearings are pre-packed with heat-resisting lubricant!



3 Any Shape Kelly — whether square, hexagon or octagon—is sealed off continuously while in the unit. Also, the varying diameters of the drill string—drill collars, subs, couplings, tool joints and drill pipe (whether flush joint, upset or coupled) all readily pass through the unit without losing the pressure-tight seal—because the Stripper Rubber **automatically** expands and contracts to pass them.

6 When Pulling Pipe out of the well, the Stripper Rubber continues to maintain its pressure-tight seal around the drill string while a patented barrier of steel latches prevents damage to the Stripper Rubber as couplings, tool joints and other variable diameters are pulled through it. This steel barrier also prevents the rubber from extruding under high well pressures.

TWO TYPES
Type 50 for drilling through 10¾" casing and larger — Type 51 for slim hole drilling, drilling in, production jobs and remedial work. Both have same basic design features.



The Shaffer Combination Rotating Blowout Preventer and Stripper

is the most advanced equipment yet perfected for automatic pressure control because it embodies *so many* unique advantages in *one* unit.

Moreover, its operating simplicity is unequaled. There's nothing to remember—or forget—when pressure emergencies threaten because this unit *automatically* seals off around the drill string as soon as the tools are lowered into the well... *and maintains this pressure-tight seal—without attention—throughout all subsequent drilling operations, including the adding or removing of drill pipe.*

SHAFFER

HIGH PRESSURE DRILLING AND CONTROL EQUIPMENT • FISHING TOOLS THAT EXCEL

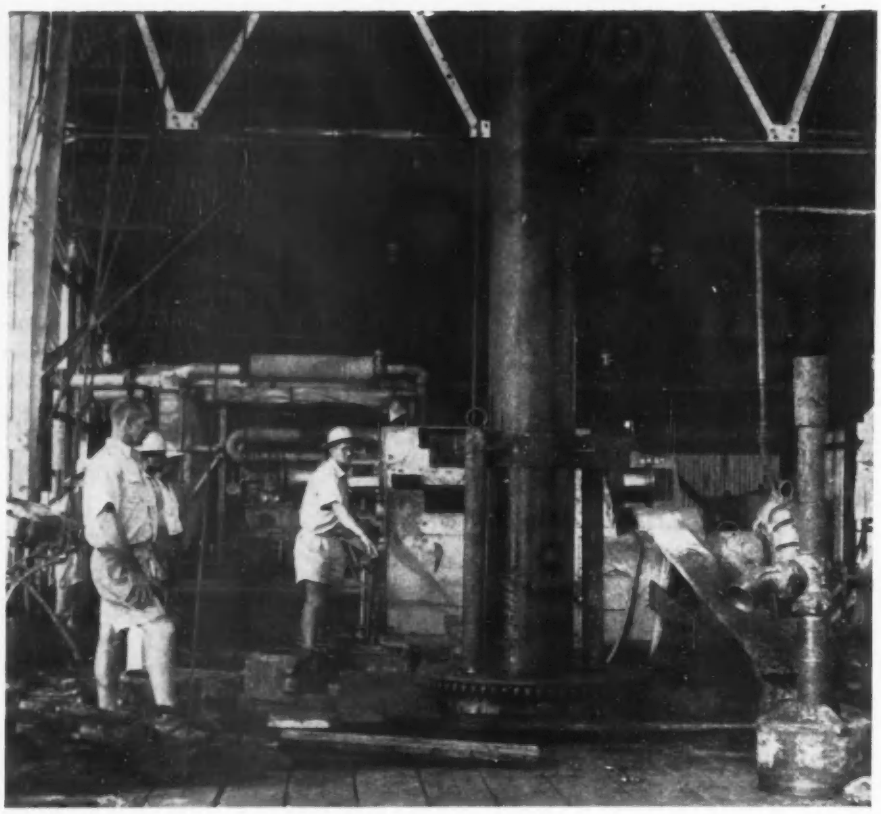
SHAFFER TOOL WORKS, Brea, California • California Service Shops: Santa Fe Springs and Taft
HOUSTON, TEXAS, 6006 Navigation Blvd. • ODESSA, TEXAS, 1925 West Second Street
OKLAHOMA CITY, OKLAHOMA, Acme Oil Tool Company, 1001 S. E. 29th STREET
FARMINGTON, NEW MEXICO, Shaffer Tool Works, Post Office Box 546
CASPER, WYOMING, Shaffer Tool Works, Post Office Box 1788
EXPORT SALES OFFICE: Shaffer Tool Works, 500 Fifth Avenue, New York, N. Y., U.S.A.

30 years OF OIL TOOL LEADERSHIP

Contact your nearest Shaffer representative for complete details — or write direct.

Send for your free copy of the 1953 Shaffer Catalog.

See pages 4611 to 4686 of your 1953 Composite Catalog.



Shell Oil Company Photo

DRILLING RIG of British Malayan Petroleum Company, Ltd., (Shell) offshore in South China Sea. Search is under way for an underwater extension of Seria field in Brunei, British Borneo.

Shell Oil Company Photo

SEASHORE WELLS in the Seria field of British Malayan Petroleum Company, Ltd., (Shell) at Brunei, British Borneo.

from Netherlands New Guinea. Stanvac's production from Indonesia last year amounted to 23.4 million barrels, a decline of 1.1 million barrels from 1951. Total daily average for the company from Indonesia and New Guinea amounted to 65,960 barrels daily.

California-Texas Oil Corporation, Ltd., is the other producer in the area with its output limited to the Minas field in Central Sumatra, a wartime discovery that went on commercial production in May, 1952. This field produced 5,484,096 barrels last year, for a daily average of 16,000 barrels. In recent months, however, the company's subsidiary, Caltex Pacific Petroleum Maatschappij, has increased its output to about 45,000 barrels daily, all of which was being imported on the U. S. West Coast. This company also has a 20 percent share in the production from New Guinea, with its share last year amounting to 960 barrels daily.

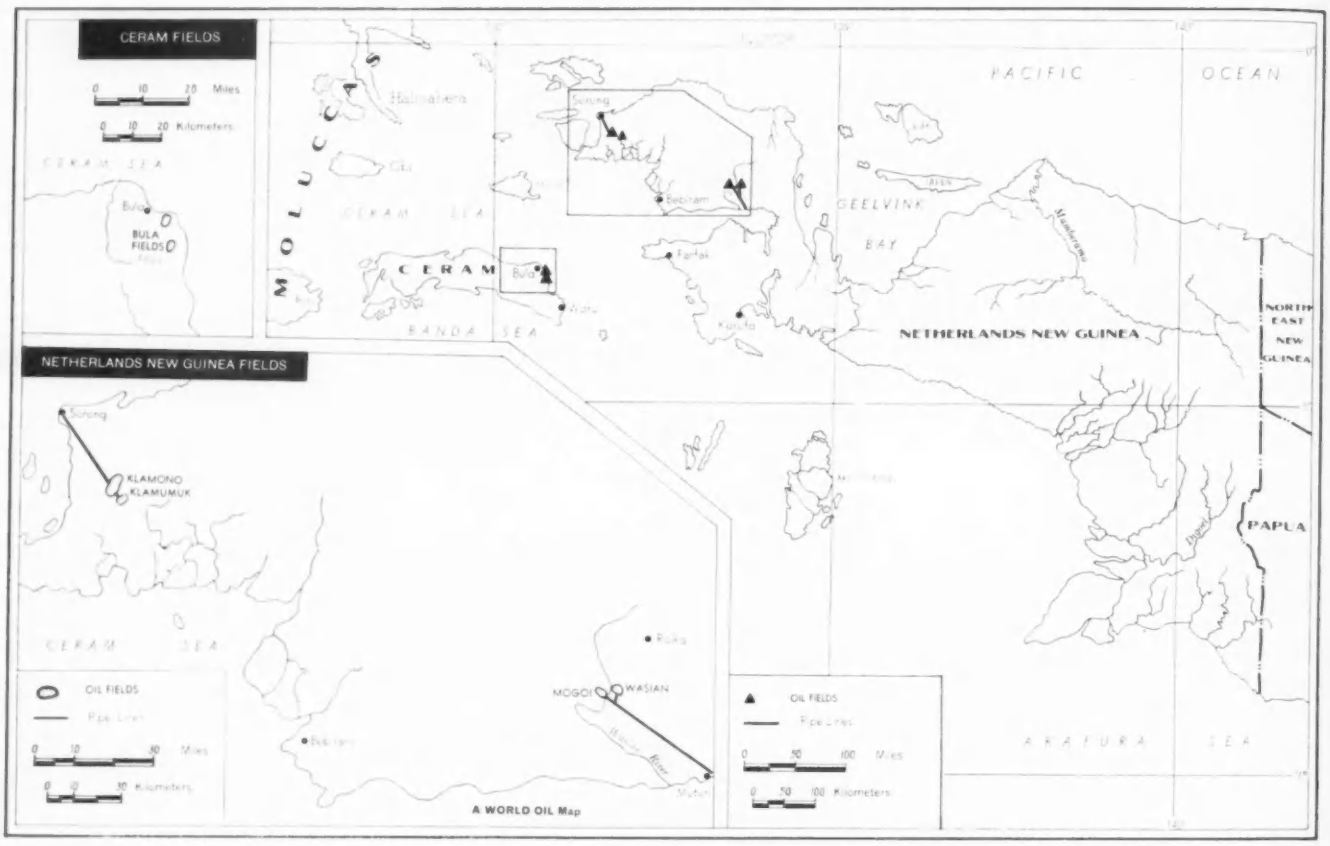
While the combined crude output of the chief producing region of the Far East—Indonesia, British Borneo and Netherlands New Guinea—reached a new high of 102,493,363 barrels, operations in these three areas were far below the full potential. Last year's volume represented an increase of 7.9 million barrels from 1951, but it was the smallest year-to-year increase in the postwar years.

Production in the three areas last year came from 2195 wells, an increase of 174 over a year previous. At the end of the year an additional 462 producible wells were closed in, some of which may be abandoned but many others lacked pipe line outlets. In Indonesia, 23 fields, mostly in West Java and North Sumatra, have not been produced since the war due to lack of agreement over return of control to prewar owners and continued political unrest.

Almost all of the increase in production in the region was accounted for by a 7.1 million-barrel rise in output in Indonesia, which brought the nation's total crude production in 1952 to 62,514,393 barrels, or a daily average of 171,548. Last year was the first time in the postwar period that Indonesia's oil flow exceeded the prewar peaks reached in 1939 and 1940

you
BUCYRUS
ERIE
FIRST
with the
Finest
in
Spudders

CERAM–NETHERLANDS NEW GUINEA



of just slightly more than 62 million barrels.

New Highs. Production from the Seria field in Brunei and the Miri field in Sarawak in the British colony of Borneo totaled 38,251,200 (an average of 104,510 barrels per day) and amounted to an increase of 782,262 barrels over 1951. While this was a new high for these two fields, whose commercial productive history dates back to 1929 and 1911 respectively, the increase over 1951 was extremely small when compared with previous postwar years. An attempt was being made to find an extension of the Seria field about a mile offshore in the South China Sea.

Crude production in Netherlands New Guinea has been steady at a little more than 1.7 million barrels in the past few years and last year's total of 1,727,770 was a decline of 27,830 barrels from 1951.

Production in 1953 in Borneo and New Guinea has been at about the end of 1952 rate, but a substantial increase has occurred in Indonesia, reflecting full production during all of this year of Caltex's Minas field in Central Sumatra. Present output from this field which went on commercial production May, 1952, is about 45,000 barrels daily, and indications are the daily average for Indonesia for all of 1953 will be in excess of 210,000 barrels.

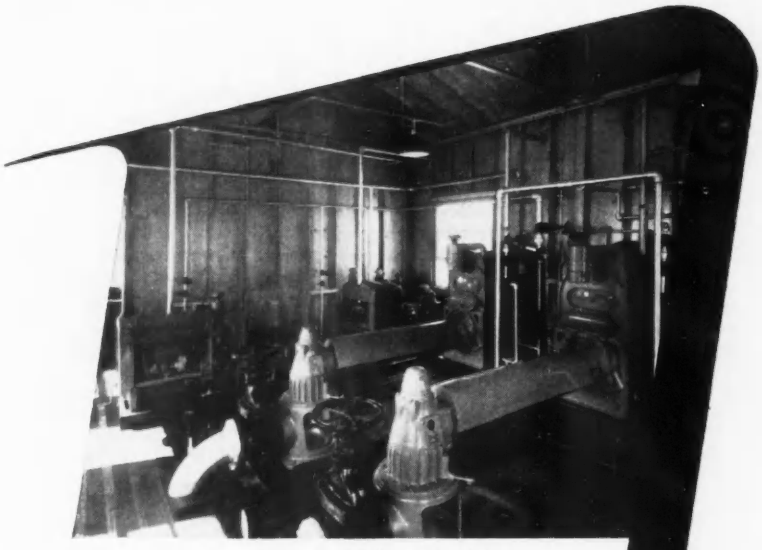
Despite continued uncertainties in Indonesia, the drilling program last year was at a new high with a total of 146 wells completed. Wildcatting reached a postwar peak with completion of 12 wells, two of which were new fields. The discoveries were made by Caltex in Central Sumatra with the Kotabatak field, and by Stanvac with the Binio field, southwest of the Pengat field, also in Central Sumatra. Of the 134 field wells completed last year, 124 were oil producers.

In Brunei's Seria field, British Malayan Petroleum completed 23 field wells in 1952, of which 20 were producers. Sarawak Oilfields drilled one dry hole in the Miri field. In Netherlands New Guinea, seven of the eight development wells drilled were pro-

TABLE 1
Far East Crude Oil Production in 1952
(Indonesia, British Borneo, Netherlands New Guinea)
(Figures in Barrels)

	Royal Dutch-Shell[1]		Standard-Vacuum[2]		Caltex[3]		Total	
	1952	1951	1952	1951	1952	1951	1952	1951
INDONESIA:								
Kalimantan	5,429,720	5,517,590					5,429,720	5,517,590
Java	4,735,740	4,581,600					4,735,740	4,581,600
Sumatra	23,423,090	20,701,300	23,441,747	24,553,061	[4]5,484,096		52,348,933	45,254,361
Total	33,588,550	30,800,490	23,441,747	24,553,061	5,484,096		62,514,393	55,353,551
BORNEO (Br.):								
Brunei	37,892,006	37,113,023					37,892,006	37,113,023
Sarawak	359,194	355,915					359,194	355,915
Total	38,251,200	37,468,938					38,251,200	37,468,938
NETHERLANDS NEW GUINEA—Total	[5]1,727,770	[5]1,755,600	(Share in Output)[5]		(Share in Output)[5]		1,727,770	1,755,600

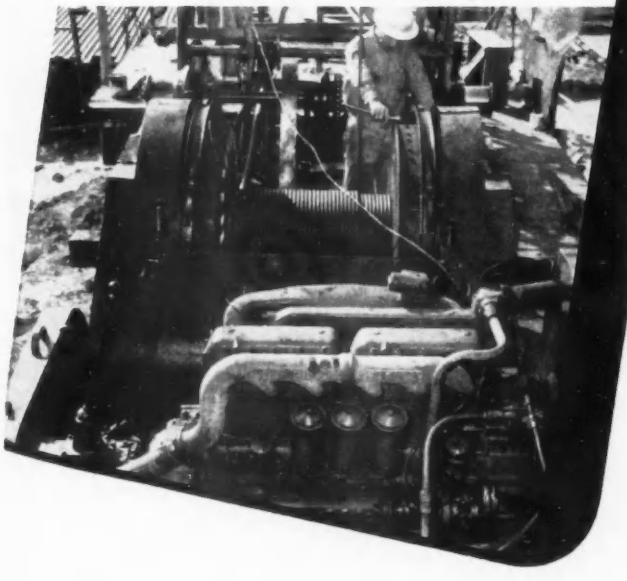
[1] Operating companies of the Royal Dutch-Shell Group in these areas are: Indonesia, N.V. de Bataafsche Petroleum Maatschappij; Brunei, British Malayan Petroleum Company, Ltd.; Sarawak, Sarawak Oilfields, Ltd. [2] Standard-Vacuum Oil Company operates in Indonesia through a subsidiary, Standard-Vacuum Petroleum Maatschappij. [3] Operations of California-TexasOil Company, Ltd. in Indonesia are through a subsidiary, N.V. Caltex Pacific Petroleum Maatschappij. [4] Commercial production commenced in May, 1952. [5] Operating company in Netherlands New Guinea is Netherlands New Guinea Petroleum Maatschappij, owned 40 percent by Shell, 40 percent by Standard-Vacuum and 20 percent by Caltex. The properties are operated by Shell.



Hercules Powered Pumping Units

Hercules Powered Pumping Unit

Hercules Powered Drilling Rig



Engine Specialists

Since 1915

Hercules

...all the way!

Yes, all the way from the oil fields to the refined petroleum product you'll find dependable Hercules high-speed, heavy-duty gasoline and diesel engines and power units helping men and machinery produce the many urgently needed petroleum products.

For over 38 years, Hercules Motors Corporation—Engine Specialists—has been producing engines for all types of equipment. Wherever petroleum products are produced, you'll find Hercules powered drilling units . . . pumps . . . generator sets . . . trucks . . . exploration equipment as well as many other types of machinery.

For complete information and specifications on any of the 69 Hercules models—3-500 H. P. gasoline, gas, kerosene, L.P.G. or diesel engines —contact a Hercules oil field branch or distributor or write . . .

HERCULES MOTORS CORPORATION - Canton 2, Ohio, U. S. A.

Hercules Oil Field branches: Houston, Odessa, and Kilgore, Texas; Salem, Ill., Oklahoma City, Okla. and Los Angeles, Calif.

ducers. Seven wildcats were completed and two of them had shows of oil but were later abandoned.

The 1953 drilling programs indicate another record year in drilling will be reached. Caltex, with two rigs in operation in its Minas field, plans to drill 35 development wells to the shallow producing formation found at about 2250 feet. The company completed 33 wells in the field last year which brought to 61 the producers in the field. Minas field wells have been drilled on a one-kilometer spacing, but plans were to step this out to two kilometers. The limits of the field have yet to be determined. In 1953, Caltex completed a big step-out to its 1952 Kotabatak discovery. The company has three other closed-in fields in Central Sumatra without pipe line outlets. There are no present plans to produce these fields.

Standard-Vacuum completed 33 field wells in South Sumatra, 7 wildcats in the same area and 4 wildcats in Central Sumatra in 1952, and programmed the completion of 49 development wells and 17 wildcats for 1953.

TABLE 2
Far East Producing Wells and Drilling in 1952
(Indonesia, British Borneo, Netherlands New Guinea)

	Producing Wells End of Year	Producible But Closed in Wells	1952 Field Completions		Wildcat Completions	
			Oil	Total	Oil	Dry
INDONESIA:						
Kalimantan	726	67	15	19	..	..
Java	110	13	6	7		
Sumatra	1018	83	103	108	2	12
Total	1854	163	124	134	2	12
BORNEO (Br.):						
Brunei	199	86	20	23	..	..
Sarawak	132	200	..	1	..	..
Total	321	286	20	24	..	..
NETHERLANDS NEW GUINEA:						
Total	20	13	7	8	..	7

Japan . . . Conservation measures drop production to 2,133,568 barrels following overproduction during 1951.

JAPAN CONTINUES to fill more than 90 percent of its domestic petroleum requirements, but the nation with the substantial help of American oil companies is rapidly completing construction on a modern refining industry to eliminate its imports of products and limit its imports to crude petroleum. Domestic consumption of petroleum in Japan in 1952 was about 308 million barrels, still slightly below the 1936-39 prewar average. Actual consumption was limited by the amount of exchange available for imports, though with a greatly enlarged domestic refining industry on stream by the early part of 1954, expectations are that the Japanese will be able to support a great use of petroleum products. About 70 percent of the Japanese petroleum imports comes from dollar sources, in Middle East and Far East, hence the big interest of American companies in the Japanese refining industry.

Domestic crude production in 1952 totaled 2,133,568 barrels, or 5850 barrels per day, as compared with 2,332,350 barrels, or 6390 barrels per day in 1951. Cumulative production at the end of 1952 was 100,716,670 barrels. About 97 percent of Japan's 1952 output was produced by Imperial Oil Company, which represents government and private Japanese interests. The latter's output in 1952 was 2,078,405 barrels.

The total production in 1952 came from about 3000 wells and the 7.5 percent decline from 1951 is attributable to enforcement of conservation measures after overproduction at excessive gas-oil ratios in 1951, principally from the deep reservoir in the Yabase field.

Because of this excessive production, decline rates moved up rapidly for wells producing from the deep reservoirs. Some of the loss was made up by new field wells. One of the most important developments in production operations in Japan was the successful application in the past two years of secondary recovery by water flooding in the shallow depleted reservoirs in the southern half of the Yabase field.

The results achieved in 1952 from this program have stimulated an expanded program for 1953 and future years. It can be expected that production of crude by secondary recovery will account for an increasing percentage of Japan's crude production in future years.

During 1952 much interest was displayed in the deeper producing horizons of the Yabase field, and its development has lent much encouragement to the Japanese attempt to find additional domestic oil supply.

Exploration field activities continued at approximately the same level as in 1951 with some 200 party months of geological and geophysical surveys being conducted. Most of this work was carried out in the northwest basin of Honshu (where Yabase is located). Also some gravity meter work was directed towards the interpretation of the possible petroleum potentialities in the Kanto Plains area north of Tokyo.

The most important discovery of the year was the successful wildcat on the nose of a large anticline in the Shinjo basin of Yamagata prefecture. Three pay zones were penetrated between depths of 1300 and 3900 feet. Initial production was about 100 barrels daily. Since almost all of the Japanese production has been found in the basins bordering on the Japan Sea in northeastern Honshu, this commercial discovery, the first in an inland basin, greatly improves the prospects for additional production from other inland basins in this general trend.

Ordinary steels do not pass the high requirements set for Jones sucker rods. Only carefully selected steels that meet laboratory tests are acceptable. What's more, they must pass a series of controls throughout fabrication. This is another assurance of uniform quality when you run the green rods.

LOOK FOR THE GREEN RODS

JONES SUCKER RODS

P·E·S·A
PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION
PARTNERS IN PETROLEUM PROGRESS

THE S. M. JONES COMPANY
Division of Buffalo-Eclipse Corporation
General Office and Factory: TOLEDO, OHIO
Sales Office: Kennedy Building, Tulsa, Okla.
Export Sales Office: Buffalo International Corp.
50 Church Street, N. Y. C.

Philippines . . . Activities continue by Philippine Oil Development Co. and Bureau of Mines. Numerous reports show promise.

DURING 1952 petroleum activities in the Philippines were conducted solely by the Philippine Oil Development Company, Inc., and the Bureau of Mines. Interest in oil was indicated from numerous reports on existence of oil and gas seepages in various parts of the country. The 1949 oil law gives a percentage of government royalty to discoverers of surveyed and verified discoveries.

During the early part of 1952, Philippine Oil Development drilled three holes on its lease in Bondoc Peninsula, Quezon Province, in southern Luzon. Drilling difficulty was reached at 460 feet in each well, and operations were suspended.

At about the same time the company was drilling at Bondoc, it also was conducting magnetometer surveys in the Cagayan Valley, the Central Plain of Luzon, the Iloilo Basin, Cebu, and the Turtle Islands in the Sulu Sea, north of Borneo.

The Bureau of Mines conducted geologic exploration surveys in the southern part of Mindoro Island, where Tertiary sediments and oil indications have been reported, as well as in eastern Davao in Mindanao.

At year's end, Philippine Oil Development surveyed a drilling location in its recently-acquired exploration concession in Iloilo. A rig was erected on the site, and drilling was scheduled to commence early in 1953.

Caltex (Philippines) Inc., is constructing a refinery at Batangas, south of Manila.

Australia . . . Exploration activities stepped up by vast new refining program and growing domestic needs on continent.

INTEREST IN AUSTRALIAN exploration in 1952 was quickened by a vast new refining program overlaid upon the mounting domestic needs of the continent.

Major planning centered on Western Australia's North-West Basin, site of a largely unexplored area with sedimentary deposits 10,000 to 15,000 feet deep. Geological, gravity and seismic work begun here in 1951 by the Bureau of Mineral Resources are being furthered by West Australian Petroleum Proprietary, Ltd., formed by Caltex (80 percent) and the Australian company AMPOL (20 percent). Westralian was doing geological and geophysical work in Kimberley at year's end, and had landed drilling equipment in the Exmouth Gulf to drill the 65-mile-long Giralia-Cardabia structure, possibly to 15,000 feet.

Heaviest drilling took place in the Roma area of Southern Queensland, which for more than 30 years had claimed the interest of oil seekers. Associated Australian Oilfields went to 7250 feet before giving up on one test, and was nearing completion stage at another test as the year ended. Geophysical work was also in progress.

In New South Wales, drilling was dormant and a refinery at Glen Davis was shut down.

In Papua, long the main target for oil quests in the Australian area, Island Exploration drilled at Omati. Geological and seismic crews were busy in the Papua Gulf area.

In contrast to the fruitless drilling program, the continent's refining capacity is scheduled to mount from 6,210,950 barrels a year to 45,668,750 by 1956.

Four companies planning or actually at work on increased throughput were Anglo-Iranian Oil Company, Caltex, Vacuum Oil Company, and Shell Oil Company.

Biggest project is the refinery being built by Anglo-Iranian at Kwinana, on Cockburn Sound, just south of Fremantle in Western Australia. The plant is to be completed in 1955 with a throughput of 21,921,000 barrels a year.

Shell's expansion is on the shores of Corio Bay, near Geelong, in Port Philip Bay, Victoria State. Output by 1954 is expected to be 7,307,000 barrels per year.

New Zealand . . . Production totals 8634 barrels. Development lags but hopes rise for more use of natural gas.

NEW ZEALAND PRODUCTION totaled 8634 barrels during 1952 as development lagged but hopes rose for increased use of natural gas.

The nation's output consisted of 1661 barrels of gasoline, 142 barrels of distillate, 1596 barrels of kerosine, 2022 barrels of diesel oil, and 2781 barrels of residuals.

Efforts continued to use casinghead gas for industrial power and home usage. Initially, the gas is to be mixed with coal gas at New Plymouth, with the expectation of converting the plant to natural gas. About 20 percent of the New Plymouth supply would be provided from the three oil wells now producing. Extension of drilling, possibly to be undertaken by Egmont Oil Wells, Ltd., might lower the rates by increasing the supply.

The over-all production for 1952 represented an increase over the postwar average, which was approximately 1890 barrels a year. British and American oil companies discontinued activities in 1944 after 13 deep tests failed.

Scottie McBlock Ponders — Pertinent Points to Perceive for Purchasing . . . A BETTER TRAVELING BLOCK.

Has it a positive grease seal protecting each bearing?

McKISSICK HAS!
Johns-Manville Klipper Seals on all traveling blocks.

Has it a center or divider plate between each sheave minimizing center pin deflection?

McKISSICK HAS!
center plates support pins between each sheave . . . to distribute load more evenly and stop deflection.

Has it necessary weight and balance for FAST TRUE falls?

McKISSICK HAS!
heavy steel plate construction throughout . . . no need to add ballast for extra weight.

Is it readily adaptable to popular hooks?

McKISSICK IS!
illustrated are combinations of McKissick blocks with Byron-Jackson and Webb Wilson hooks.

COMBINATIONS ARE EASILY SEPARABLE TOO!

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

Algeria . . . Crude production rises 158 percent to 261,700 barrels during 1952.

ALGERIAN CRUDE production in 1952 of approximately 261,700 barrels was a rise of 158 percent from the yield during the previous year, or 160,382 barrels more than the 101,382 barrels output of 1951. The rising importance of Algerian petroleum is indicated by the major rise from 1950, when production was 51,893 barrels. Cumulative production for the country amounted to 416,800 barrels at year's end.

The single producing oil field is Oued Gueterini (formerly called Sidi Aissa), eight miles northwest of Sidi Aissa and about 70 miles southeast of Algiers on the southern border of the Tellian Atlas mountains. Daily average production at the close of 1952 was about 1400 barrels from 57 wells.

Entrance of Shell Oil Company into the exploration activities and the spiraling daily crude production by S. N. Repal, the French-controlled company operating the only producing field in the country, drew international attention to petroleum possibilities in Algeria in 1952.

Oued Gueterini is being operated on an independent concession, owned by Societe des Petroles d' Aumale (SPA) under the presidency of the general manager of S. N. Repal. The company has eight rigs in operation, and total footage drilled during 1952 was expected to exceed 100,000 feet.

There are no restrictions on foreign ownership of Algerian concessions. S. N. Repal holds 86,890 square miles of concessions, principally in the north half of the country. Shell's concessions cover about 93,000 square miles south of Repal's holding and in the Algerian Sahara desert region, south of Ourgla and north of In Salah. Another French company, Regie Autonome de Petroles (RAP) has taken a still larger concession contiguous to and south of Shell's lease.

Tunisia . . . continues exploration program.

THREE COMPANIES were drilling wildcats at 1952's end in a continuation of the persistent exploration program in Tunisia.

Development of the Cap Bon gas field was pushed by The Société de Recherches et d'Exploitation des Pétroles en Tunisie (SEREPT), organized in 1949 with the Tunisiana government holding 30 percent, the Bureau de Recherches de Pétrole, French government agency, 58 percent; and the Campagnie Francaise des Pétroles, 12 percent. Aside from its Cap Bon development work, SEREPT spudded a wildcat 60 miles southwest of Tunis which had encouraging gas shows in Lower Cretaceous beds.

A wildcat near Sousse was abandoned below 6700 feet by Campagnie Francaise des Pétroles de Tunisie (CPDT), which was formed in 1950 with the Royal Dutch Shell Group having a 65 percent holding and SEREPT the remainder. CPDT was drilling another wildcat at Ktirir, 20 miles south of Kairouan, which was scheduled to 10,000 feet, if necessary.

The other company active in 1952 was The Société Nord-Africaine et Pétroles (SNAP), held 65 percent by Gulf and 35 percent by SEREPT. It holds two permits on the mainland and a third on the island of Djerba. After a geophysical survey the company began drilling a stratigraphic well in the vicinity of Sfax.

Except for exploration in southwest Franche, Tunisia is the only French territory where majors have participated in full-scale exploration work. This brings new implications to a demand already stimulated by the local economy. Need for petroleum products is more than 2½ times the prewar level, owing principally to the increase in vehicles, the improved standard of living which has heightened the desire for home-used kerosine; the growing farm mechanization; increased need for fuel used in electrification; and the displacement of steam locomotives by diesels.

These Fishing Tool Experts Offer LeBus Knuckle Joint Service

Brown Oil Tools, Inc.
2216 Campbell Street
Houston, Texas

Brown Well Serv. of West Texas
P. O. Box 1187
Odessa, Texas

M & B Fishing Tool Company
P. O. Box 1125
Odessa, Texas

Acme Oil Tool Company
P. O. Box 4696
Oklahoma City, Oklahoma

Great Bend Fishing Tool Co.
P. O. Box 617
Great Bend, Kansas

Starner Fishing Tool Serv., Inc.
P. O. Box 657
Casper, Wyoming

Bowen Fishing Tool Company
P. O. Box 427
Santa Fe Springs, California

Bowen Fishing Tool Company
P. O. Box 1046
Casper, Wyoming

Tri-State Oil Tools, Inc.
P. O. Box 5588
Shreveport, Louisiana

Fishing Tools, Inc.
P. O. Box 1106
Odessa, Texas

J & K Fishing Tool Company
606 West Third Street
Odessa, Texas

French, Jordan & White Fishing Tool Serv
P. O. Box 146
Harvey, Louisiana

Houston Oil Field Material Co.
P. O. Box 2589
Houston, Texas

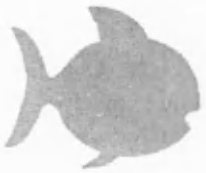
E. E. McCoy & Son
P. O. Box 644
Grayville, Illinois

Woolley Tool Company
Kilgore, Texas

Eastman International Company
P. O. Box 1500
Denver 1, Colorado

Call them for full information

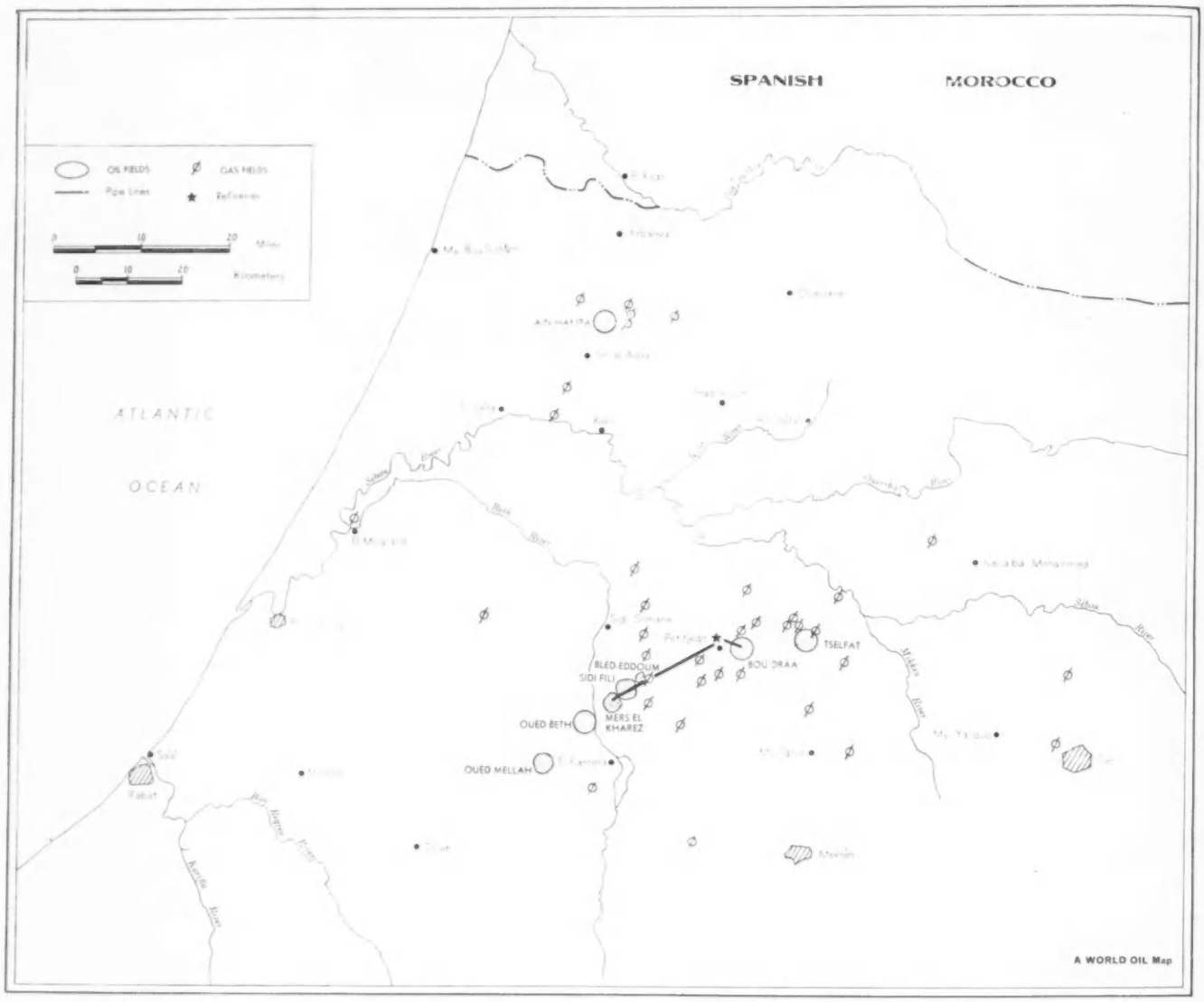
These Experts can show you why the LeBus Knuckle Joint Overshot System is THE BEST INVESTMENT YOU CAN MAKE... because the LeBus Knuckle Joint Overshot System is so efficient that by running the Knuckle Joint above the Overshot on every fishing job, you are able to contact the fish *quickly* and at a *minimum of expense.* The FO-47 Knuckle Joint will help the Overshot Guide contact the fish quickly on the first run, which is insurance against expensive cutting jobs. The cost of cutting a string of stuck pipe is often more expensive than the entire cost of one LeBus FO-47 Knuckle Joint. Have the LeBus Knuckle Joint always available on your derrick floor.



LEBUS

LEBUS ROTARY TOOL WORKS

P. O. BOX 2352 LONGVIEW, TEXAS PHONE 1232



Morocco . . . produces 710,000 barrels of crude in 1952, up 151,000 barrels or 27 percent from previous year.

Morocco oil fields yielded 710,000 barrels of crude during 1952, up 151,000 barrels from the previous year—or an increase of 27 percent. That amounted to a daily average production figure of 1939 barrels. Sixty-three wells were producing at year's end. Of the 1952 output, 367,000 barrels from the Sidi Fili field, where wells producing from primary beds yielded 341,000 barrels and secondary bed producers' output amounted to 26,000 barrels. Twenty-two wells were producing in the Sidi Fili field at the close of the year—17 from primary beds and five from secondary beds.

A total of 70 wells was completed during 1952, for a total depth of 290,000 feet. Twenty-one wells were completed as crude producers in the Oued Beth, Oued Mellah, Sidi Fili, and Mers el Kharez fields. These fields also accounted for 11 dry holes. Of 38 wildcats attempted during the year, only one found oil.

As in 1951, Société Chérifienne des Pétroles continued its chief exploration activities along one of the borders of the secondary Riff basin, between Petitjean and El Kansera. A new pool, Bled-Eddoum, was discovered in the Sidi Fili area, and extensions were completed in Jurassic beds in the previously-discovered oil fields which produce from primary beds.

A core drill campaign, located near the Tselfat anticline, was completed in 1952. Results are awaiting evaluation.

An active geophysical survey continued during the year with two seismic crews operating in other borders of the same Riff basin, extending from El Kansera to Meknes and to Fes.

The present government of Morocco, a French Protectorate, is headed by the Sultan, who is advised by a French Resident General. The French are protecting, as far as possible, the religion, customs and culture of the Moors.

Egypt . . . Situation same as two years ago . . . king has been deposed . . . a republic formed . . . and new oil law enacted.

THE PRESENT STATUS of the petroleum industry in Egypt is about the same as it was almost two years ago. A king has been deposed, a republic has been formed and a new oil law enacted. While the first two actions brought about a much-needed political house cleaning, the latter has brought no results to date.

Nearly five years in the making, the new petroleum legislation was promulgated by the government of Maj. Gen. Mohammed Naguib in May, though it only removed one of the three restrictive provisions of the 1948 law which the two present operating oil companies and one former company had repeatedly requested.

Under the 1953 law, foreign as well as Egyptian companies may now obtain production leases without discrimination. The new law, like the old one, however, gives no guarantee that a discovery of petroleum would give the exploration company any preferred treatment in requesting a production lease on its exploratory block. It also requires that products refined from indigenous crude be sold domestically at prices considerably below the prevailing world markets.

Since the Egyptian law requires that domestic production first be used to fill the needs of Egyptian refineries before exports are permitted, oil producers have no assurances that revenues received would be sufficient to provide a satisfactory margin of profit. With such obstacles the two Egyptian producers, Anglo-Egyptian Oilfields, Ltd. (Shell) and Socony-Vacuum Oil Company, Inc., abandoned exploration work almost two years ago. Both companies also ended field drilling operations at the end of the first quarter in 1952 with the exception of one rig used by Anglo-Egyptian in the Ras Gharib field.

1952 Crude Production. Crude production last year moved slightly ahead of 1951 to 16,373,493 barrels, which, while a record, only amounted to 68 percent of domestic requirements. Government estimates say Egypt's petroleum requirements will increase by 10 percent annually over the next few years, and oil producing officials estimate that production from present fields will decline by 50 percent within the next two to three years.

The new Egyptian Government has ambitious plans for its petroleum development though they probably will never reach reality unless legislation is passed to provide the incentive for development. In a petroleum policy report submitted to the Naguib government in mid-1953, Hussein Fahmy, chairman of the National Production Council, proposed that drilling should continue in Abu Durba, Hurghada and Gemsa fields and that the new fields, Wadi el Feiran and Ras Matarma should be placed into production.

Of these prospects listed by the planners, Abu Durba and Gemsa have been abandoned for several years for lack of commercial production and the Hurghada field is now in the later stages of its productive life. The daily average from 24 wells on pump presently is less than 800 barrels.

Wadi el Feiran was a discovery made by the Standard Oil Company (N. J.) Egyptian company in which one producer was completed before the company decided to abandon its Egyptian operations in 1949 in view of the unfavorable political and economic outlook. Ras Matarma is a 1948 discovery made by Anglo-Egyptian with three closed in wells since the Egyptian government in the five years since its discovery has not granted AEO a production lease to produce the field.

Other Africa . . .

PETROLEUM EXPLORATION activities are under way in a number of African countries around the South Atlantic Coast and in the nations bordering on the Indian Ocean. While these various operations involving American, Belgian, British and French companies are scattered and small scale, they represent significant strides in one of the few remaining oil "frontiers."

Exploratory operations have been conducted in east and west Africa at intervals for more than 25 years, and while no commercial discoveries have been made, geologists think that both the South Atlantic and Indian Ocean coasts are possible areas of petroleum deposits.

In West Africa, a jointly-owned subsidiary of Anglo-Iranian Oil Company, Ltd., and Royal Dutch-Shell Group commenced exploratory activities in Nigeria 16 years ago. The company spudded in its first deep test in the fall of 1952 on its 60,000-square-mile concession. Located nearly 100 miles inland from Port Harcourt, the well was completed as a dry hole before the end of the year. Following additional geological and geophysical surveys, two more wildcat wells were staked and were drilling in mid-1953.

On the West Coast of French Equatorial Africa, a French Government company, Société de Pétroles de l'Afrique Equatoriale Francaise, reported completion of a successful wildcat in November, 1951, with a very small production on the Ogowe River, 75 miles inland.

A concession for exploration and production was granted by the Portuguese Government to a subsidiary of the Belgian company, Petrofina, in Portuguese West Africa, The company, Cia. de Combustiveis do Lobito, was granted an exclusive concession covering a large area in Angola.

In East Africa where the greatest interest in exploratory operations has been shown, Mozambique Gulf Oil Company spudded in its first wildcat late in 1952, the Domo 1, which at recent report was drilling at 8000 feet.

Northward up the east coast, a jointly-owned Anglo-Iranian and Shell subsidiary has a broad program of geological and geophysical surveys underway.

Israel . . . Drilling operations scheduled to get under way late this year . . . hopes high despite previous failures.

DRILLING OPERATIONS were scheduled to get under way in Israel late in 1953 in the first serious effort to search for oil in that area since previous unsuccessful attempts were abandoned in 1948. Under the terms of a petroleum law that became effective August 31, 1952, the nation's development department granted 31 licenses to seven entities early this year.

Despite the previous failures to find petroleum reserves within the area now comprising the country, the young nation and the concessionaire companies have been encouraged by a study of Max Ball, American petroleum consultant, on the petroleum possibilities of the nation.

The discovery of domestic petroleum in Israel would be of significant economic benefit to the nation which now must import its total domestic requirements. Because of the continued Arab-Israeli dispute, the southern extension of Iraq Petroleum Company's pipe line network which runs from the Kirkuk field of Iraq through Israel to Haifa on the Mediterranean has been closed since the start of the Arab-Israeli war in 1948. This, plus the ban on shipments of oil through the Suez Canal bound for Haifa enforced by the Arab League, has cut off nearby sterling produced oil to Israel and made the nation seek sources in the Western Hemisphere. The effect on the nation's economy has been severe.

Throughput to the Haifa refinery of Consolidated Refineries, Ltd. (Anglo-Iranian Oil Company, Ltd. and Royal Dutch-Shell) has been limited in recent years to domestic demand. Crude runs in 1952 averaged 17,700 barrels daily, or less than one quarter of the plant's 83,000 barrels daily capacity. Early in 1953 the Israeli Government and Consolidated Refineries reached an agreement under which the company will pay income and other taxes to the government and that the British-controlled company would provide certain aid to the formation of a petrochemical industry by Israel. Previously, under the British Mandate in Palestine, the company was exempt from taxation on its operations.

Exploration licenses which gave exclusive rights for test drilling and for the acquisition of a full production lease if a discovery of oil is made were granted this year to: Husky Oil & Refining Company (American); Lapidoth (Ampal Mekoroth) (American and Israeli interests affiliated with the Israel Federation of Labor); Israeli Prospectors Corporation, Ltd. (American, Israeli and Swiss); Jordan Exploration Company, Ltd. (Israeli); New Continental Oil Company (Canadian); a Canadian group including Newkirk & Company; Minervah Mining Corporation and Harrison & Company; and a group represented by Garson Brodie, a geologist and independent producer of Denver.

Pontiac Petroleum, Ltd., which has been operating in Texas through an American subsidiary, received a license to ship a drilling rig to Israel this summer to drill on the 700,000 acres of concessions in several areas held by New Continental Oil.

The 1953 Israeli petroleum law requires that exploration must commence within four months after a concession grant and that test drilling must start not later than two years. Each exploratory license is for a maximum of 100,000 acres and no person may hold more than 250,000 acres in a single petroleum district.

The three-year exploration license entitles the holder to a 30-year production lease after a discovery is made. Each production lease would be for a maximum of 62,500 acres with a total limit of 187,500 acres in each petroleum district.

Sicily . . . Preparations well along for conclusive tests on concessions.

PREPARATIONS WERE far advanced at year's end for conclusive tests on portions of Sicilian concessions which approximated 789,086 acres.

This total included 247,085 acres granted to American International Fuel & Petroleum Company (Gulf), 248,599 acres held in four concessions by Macmillan Petroleum Corporation, and 226,008 acres held in three concessions by D'Arcy Exploration Company, Ltd., a subsidiary of Anglo-Iranian Oil Company, Ltd. Macmillan and Gulf are also jointly active through Mediterranean Oil Company, organized to drill in Sicily.

American International scheduled a deep test on its Ragusa concession in southeastern Sicily, and another exploratory well was planned by Mediterranean.

Both Gulf and Macmillan have been conducting exploration activities for several years in the vicinities of Ragusa, Agrigento, Caltanisetta and Licata. Oil formations are expected at 8000 to 12,000 feet.

D'Arcy Exploration has been active since mid-1951, when the company was granted permits to prospect around Ravanusa, Vittoria and Priolo in southern and eastern Sicily. The firm has completed a seismic survey on its concession, and previously had made geological and gravity surveys.

A continuing quest for gas horizons is being conducted by the state-controlled Azienda Generale Italian Petroli, a pioneer in exploring the island. Along with two other Italian concerns, AGIP has done extensive research between Ascoli Piceno and Macerata, where six wells have been completed. Exploration will continue southward.

A spur to recent exploration has been the oil law of 1950 which offers reasonable terms to prospectors. This came from a postwar arrangement under which Sicily was given semi-autonomous status within the Italian Republic. The Regional Government showed a prompt appreciation of oil's potential upon the depressed economy, and is itself making exploratory efforts in three zones of the island.